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A MANUAL
ON THE
TURE OF SMALL FRUITS.

Strawberries, Raspberries, Currants,

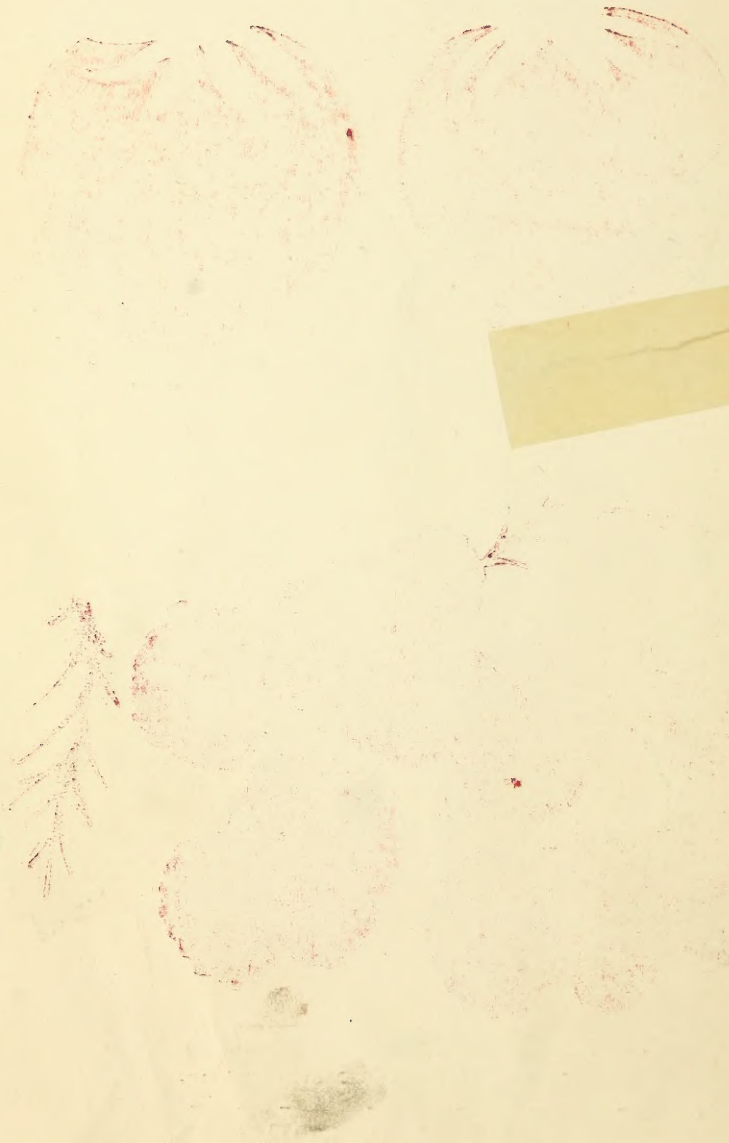
GOOSEBERRIES, BLACKBERRIES, ETC.

How to Raise and Market Them.

PRICE, - - - - - - 50 CENTS.

BY E. P. ROE,

Author of "Play and Profit in my Garden," "Barriers Burned Away," "Opening a Chestnut Burr," "From Jest to Earnest," Etc.



A Manual

on the

Culture of Small Fruits,

By E. P. Roe.

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E. G. B. Feb. 14. 27.

AN OPEN LETTER.

TO THE READER.

HAVING received so many and varied questions concerning the culture of small fruits, especially strawberries, and finding it quite impossible to answer them separately, by letter, I have been led to reply by the following brief manual.

At the same time I shall aim to do more. This is a busy age, and neither time nor money is abundant. There are multitudes who would gladly see upon their tables the delicious berries in their season, and if they knew how easily and readily they could be raised, would certainly cultivate them. But having made some crude experiments with but poor, or partial success, they come to think that some mystery is involved and that before they can grow small fruits themselves there must be considerable outlay, reading or practical instruction. But nature is not so chary of her best gifts and, like the sunshine, she places strawberries within the reach of all who own or hire a few square feet of land.

While the rich amateur with his trained gardener, and the practical and scientific fruit-grower by his skill can secure remarkable results, I shall try to show the hurried professional and business man, the driving farmer, the lady rurally inclined, that they, by a little knowledge and labor, can readily supply

the home market with the most wholesome of summer food. I use the word food advisedly—food that can sustain hard work, for during their season I almost live upon berries, and I have but few idle moments. I shall endeavor to give some instruction concerning the culture of small fruits so simply and clearly that one who has never seen them, can go to work intelligently—and so concisely that an hour's reading or less will prepare for this work. But let no one think that he can master the science of small-fruit culture in half an hour or half a life-time. I have been studying the subject for years with enthusiasm, and feel that I am yet but on the threshold of its knowledge. Charles Downing and A. S. Fuller would be the last men in America to say that they knew it all, and yet few know as much about every phase of horticulture. I have reference to the practical knowledge needful to secure a simple and definite end. We would all be in a woful plight if we had to teach our cooks the whole science of chemistry before they could give us a batch of sweet, light bread.

For the ordinary purposes of the garden and market there is no mystery involved. Ill-success usually arises from the lack of a little practical knowledge and from neglect—or from leaving the care of the plants to the "hired man" who may have an antipathy to everything save cabbages and potatoes.

But a fraction of the money that supplies a household from the market with fruit that is often but half ripe or half decayed, would stock the garden with the choicest varieties.

Besides, the most delicate and luscious kinds are the most easily grown usually. But they are not often found in market because too soft for transportation. They may be picked from our own gardens daily with the dew upon them.

The Editor of the American Agriculturist writes with a

great deal of force—"The unfortunate people who buy their fruit do not know what a strawberry is."

To teach as many as possible who own a little land what a "Charles Downing," a "Triomphe de Gand," or some other luscious strawberry is, directly from their own vines, is one of the objects of this manual.

At the same time I have some hope that the following pages may contain suggestions of value to those who, like myself, are engaged in raising small fruits upon a large scale. I have carefully consulted the best authorities. I have closely questioned successful and practical growers, and have had some experience myself, reaching through a number of years and a fair degree of success, as the following testimonials may prove:

STRAWBERRIES—WHAT DOWNING SAYS.—There is probably no higher authority upon fruit than CHARLES DOWNING, ESQ., and having seen the nine varieties exhibited by Rev. E. P. Roe, at D. Smith's bookstore, said that he had never seen as fine a collection, take them altogether, though he had seen as fine specimens of single varieties. They are the Monarch of the West, Champion, Triomphe de Grand, Jucunda, Seth Boyden, President Wilder, Late Prolific, Charles Downing, and Lenig's White.—*Newburgh Daily Journal.*

We have seen and tasted some of the finest strawberries from the prolific gardens of Rev. E. P. Roe, Cornwall: in size enormous, in quality admirable, and in abundance of yield extraordinary. The culture of this fruit is so easy and the result so great, we wonder that every family in the country does not have its strawberry bed. [The fruit was shown to Dr. S. I. Prime.]—*New York Observer.*

DELICIOUS STRAWBERRIES.—The Rev. E. P. Roe, well known as the author of several popular works, called our attention to some strawberries of his own raising which surpass, in the combined qualities of size and sweetness, any it has been our good fortune to test. The "Monarch of the West" was the name of the variety. The vines are very prolific of fruit, the berries hanging in thick clusters of every shade of maturity, and promising to last till late in the season. Even those which were not quite ripe were sweeter and higher flavored than we have been accustomed to find the ripe specimens of other varieties which attain the same size.—*New York Evening Post.*

Rev. E. P. Roe, of Cornwall-on-the-Hudson, has exhibited specimens of the "Monarch of the West" strawberries, which he has raised upon his place from vines less than a year old. They are fully an inch in diameter, of a fine red color, very fragrant in smell, and very delicious to the taste. Mr. Roe states that they are the most readily cultivated of any variety which he has ever raised, and they can be raised wherever a weed will grow. Charles Downing, who visited his place on Saturday, June 19th, pronounces the "Monarch of the West" the finest of about twenty varieties inspected, not excepting that which goes by his name; though Mr. Roe himself thinks the "Charles Downing" variety the superior of the two.—*New York Tribune.*

Giants in These Days.—Mr. E. P. Roe, whose "Play and Profit in my Garden" our readers will remember, sent us last week some tangible evidences that he had not exaggerated its profits, however much he may have depreciated his own labors. Half a dozen baskets of strawberries were placed on our table, with scarcely a single fruit which one would care to take in a single mouthful. One, a "Monarch of the West," measured seven inches in circumference. The flavor of some of the varieties was as noteworthy as the size. The "Monarch" is sweet as well as large, though our favorite is a medium sized berry, the "Charles Downing." Mr. Roe has moved his garden from Highland Falls to Cornwall, and increased it from three to twenty-three acres. He has acres in strawberries alone and sends his plants as far West as the Pacific Coast.—*Illustrated Christian Weekly, written by the editor, Rev. Lyman Abbott.*

I have tried to make the chapter on the marketing of small fruits of special and practical value, having spent considerable time among the leading commission men in New York, and the retail dealers on Broadway and the avenues, endeavoring to learn from them the best and most profitable methods of shipping fruit. I have taken especial pains to get the views of the retail dealers as they come directly in contact with the consumers and therefore know which packages sell the best and best preserve the fruit. They also know what varieties of fruit give the most satisfaction. There are so many patented baskets, cups, bowls and boxes pressed upon the public that one is bewildered in his choice. The question can best be decided not by the enthusiastic puffs of the patentees, but by the verdict of the market. If

it is a fact, that fruit "carries" better and "stands up" longer in one package than another—if baskets of a certain size and pattern find more favor with consumers and bring better prices, the information has a cash value to us all. I shall not get myself into a hornet's nest by criticising any of the perfect (?) patents offered, but merely mention those toward which the weight of favorable opinion in the market inclines. If I can by these means bring the growers and consumers into more direct communication, it would seem that I could scarcely fail in serving both.

Should this little venture meet with success, I may add a supplement from year to year, giving the results of my own, and the experiments of others, during the twelve months, and the conclusions of my own observation and the opinions of practical fruit-growers concerning the new varieties that are competing for public favor; a correspondence from Maine to California will preserve this judgment from a merely local coloring.

I hope my little manual will lead many more into the garden. It is a good place to be, or man—and woman also—would not have been placed there in their first perfect condition.

Wishing you nothing worse than ripe luscious berries three times a day for the three summer months I remain:

Yours in the bonds of the ancient and
Honorable guild of gardening,

E. P. ROE.

CORNWALL-ON-THE-HUDSON, N. Y.

STRAWBERRIES.

I SHALL commence with that fruit which comes earliest and which nature thought fit to be the companion of the rose. That so many live without berries throughout the year—that such multitudes raise coarse weeds when a few hills of "Monarch of the West" strawberries would not take half the room nor be half as exhaustive to the soil, is one of the proofs of our fallen nature. Are not those who look carefully after their pork and potatoes but contemptuously ignore strawberries, totally depraved? There are some men who would never have been content in Eden until they had turned the better part of it into a cabbage patch. Such people need physical ethereal-izing by fruit diet that their grossness may be refined away. Rest assured, in Millennial gardens the cabbage will not crowd out the strawberry.

There is another class whose seared consciences I would like to touch. They believe in small fruits and know their value. They enjoy them amazingly at a friend's table; they even buy some when they are cheap, and may indulge in a forlorn weedy strawberry bed. But as to putting forth a little intelligent effort and supplying themselves abundantly—the time passes and this is never done. Why? I don't know. There are some who seldom kiss their children, read their Bibles, listen to the birds or look at flowers, although they believe in all these things fully. They simply jog on to-day as they did yesterday, ever vaguely meaning at some time or other "to live up to their privileges."

But like their neglected strawberry beds they usually go on from bad to worse till they have to be "turned under."

Remember, my friend—you who occasionally smack your lips over a chance strawberry, if you have not a productive bed of your own (having place for one) you are "sinning against light."

In a city not a hundred miles from my farm there are many abodes of wealth with spacious grounds in which in many instances, I am told, no place is found for the strawberry bed. "It is cheaper and easier to buy them," it is said. This is thrift with a vengeance. No economy in brass buttons and livery, but a little trouble (I doubt about the money) saved on the choicest luxury of the year. The idea of going out of their rural paradises to buy half-stale fruit! But this class is largely at the mercy of the "hired man," or his more disagreeable development, the "*professed*" gardener who gives his soul to rare plants, artichokes, and clipped lawns, but stints the family in all things save his impudence. If he tells his obsequious employers that it is cheaper and easier to buy their strawberries than raise them, of course there is naught to do but go to the market and pick up what they can. A *true* gardener like Mr. Thos. Skene, would send to the house a heaped basket twice a day for five weeks and if he had glass, for five months.

I congratulate those who have got so far back toward man's first happy state as to make the raising of delicious fruits their daily work. But as the conditions of life have changed somewhat from that primitive and perfect state, and dress and many other costly essentials require money, I shall endeavor to show how every strawberry plant may be a source of profit as well as pleasure.

In conclusion, I would suggest to that small class (?) who enjoy making others happy that there are few ways in which they can succeed better at home, and among their friends, than by supplying them often with the "finest fruit God ever made."

I trust that we are now ready to go to work, and the first things to be considered are,

Soil and Situation.

That success depends very largely upon the character of the soil is a well established fact. Especially must this truth be taken into consideration in our estimates of the different varieties. This truth is most clearly stated by the editor of the American Agriculturist. In August 1875 he writes—"All talk about strawberries must be with reference to particular soils. As an illustration of this, the Rev. E. P. Roe exhibited in our office windows several successive lots of the 'Monarch of the West,' which were immense as to size and wonderful as to productiveness. This same 'Monarch' behaved in so unkingly a manner on our grounds (very light and sandy in their nature) that he would have been deposed had we not seen Mr. Roe's berries, for it was quite inferior to either 'Charles Downing,' 'Seth Boyden,' or 'Kentucky.'"

In Southern New Jersey I have seen the 'Monarch' bearing finely in sand. I have succeeded well with it on both gravelly knolls and moist loam, and last season picked many berries that were five and six inches in circumference. I believe that few varieties are better adapted to all conditions than this berry, and yet the principle holds good that diversity in soil and climate causes great differences in the product of the same kinds. This is true of every fruit, the strawberry varying more than any other. A favorite apple or pear in one locality is almost worthless in another. The true way is to test upon your soil the promising kinds and learn which you can grow with the greatest profit.

There are many places like my own upon which there is a variety of soil. I have sandy loam, stiff, cold clay, gravelly knolls, and black, low alluvial land. Upon such a place one ought to be able to raise all varieties worth cultivation with fair success.

The soil adapted to the greatest number of kinds is a deep, moist sandy loam, airy and open in its situation. Those who

have such level plots or valleys, where the moisture never fails, can produce enormous crops at little expense. Do not mistake wet for moist land. Where the water stands and stagnates on or just below the surface, the strawberry will not thrive. But a little drainage may convert these low, sour lands into the most productive.

While the above named soils and situations are no doubt the best, there are many excellent kinds that can be grown profitably on nearly all soils with a moderate outlay in preparation and culture. I have had fine fruit on dry knolls that were thought almost barren, and some of the choicest kinds will flourish on a stiff clay.

Avoid shade. Many wonder at their half-barren beds and short fruit season when the ground is exhausted of fertility and moisture by the roots of overshadowing trees.

Choice of soil and exposure is one of the best and readiest methods of prolonging the season. I have had ripe berries from early kinds on a warm sunny slope the 31st of May, and fine fruit the middle of July from late varieties on a cold and northern exposure.

To the extreme north, warm land and sheltered situations should no doubt be chosen, but in our latitude and farther south it should ever be our aim to escape that hardness and dryness of soil which cut short the crops and hopes of so many cultivators.

Having located our strawberry plantations, we next consider :

The Preparation of the Soil and the best Fertilizers.

The number of berries that we pick does not, usually, depend upon the area planted, but upon the preparation and enriching of the soil and the after culture. In most instances one acre can be made to produce as much as two, and at less expense, which is certainly far more satisfactory. While the strawberry plant will live under almost any circumstances, let it be most

clearly understood that large crops are only secured from a deep, rich, mellow soil. The ground must be thoroughly loosened and pulverized at least a foot, and if possible eighteen inches in depth.

I have seen a man digging over a garden plot with a short fork. The ground was not stirred lower than six inches. No wonder that strawberries left to the mercies of the "hired man" usually bear so poorly. If there comes a hot dry time as they are beginning to fruit, they often wilt to the ground. The fruit becomes hard and dry and late blossoms and young berries never mature.

For garden culture, cover the ground at least three inches with the finest and oldest manure that can be had, and then plow and cross-plow, or trench with a spade to the depth of eighteen inches, or at least one foot. If you cannot get old rotten barn-yard manure, take the best you can; any fertilizer, with the exception of lime, is better than none at all. After making the ground smooth the garden plot is ready for the plants.

Does any one object that such deep stirring and enriching of the soil costs time and money. Of course it does, but the return is fifty per cent profit, while it is doubtful whether the old slovenly method would yield legal interest.

But let us say here that the soil must never be worked when it is too wet. If it crumbles under the spade or plow, it is in proper condition. If it is sticky and turns up shiny from the plow-share wait till the sun, wind, or drainage have performed their offices.

In field culture, land from which a crop of corn or potatoes has been taken is in a proper condition to prepare at once for strawberries. If full of stones, clear it as far as possible, as they are unsightly and prevent thorough cultivation. Cart on manure till the ground is thoroughly covered. Though this advice may not apply to Western prairies, at the east and south we rarely err in over-enriching our ground. Turn all under with a heavy plow, followed if possible with a subsoil plow. Pick off the stones again if there are any, and cross-plow as *deeply* as possible, harrow and pick what stones are left and you are ready for the

plants. It is better not to mark out for them with a light corn-plow till just before planting, so that the roots may be placed at once in fresh, moist soil. I think there are but few practical fruit-growers who will not say that one acre prepared in this manner will yield as much as two run hastily over once with a plow and harrow and then planted with little or no manure.

This thorough preparation gives not only a large crop, but also large showy fruit and a long season in picking, and here is where the profit comes in. Besides if the ground is rich it resists drouth far better than if poor. Many of the berries sent to New York are so inferior that they scarcely pay the expense of picking, freight, and commission, and those who were economical of time and manure, or ambitious to count a large number of acres in fruit, learn by costly experience that only well prepared and cultivated land returns satisfactory profit. Let no one who has read of unusual yields imagine that he has only to half plow an acre of rough poor land to secure like results. The conditions of success are simple but they must be complied with. Nature is not to be cheated nor "cornered." She ever demands square, straightforward dealing, or quietly checkmates.

If the land is in fair condition for corn, enrich it with from 30 to 50 tons of barnyard manure to the acre; if it is poor or comparatively so, do not be afraid to put on 75 tons. Mix this thoroughly in the soil by plowing and cross-plowing. If manure cannot be had, guano, bone dust, hen droppings can be harrowed in at the rate of 800 to 1,000 pounds to the acre; though I would much prefer composting these concentrated agents with fifty times their weight of leaves, muck, sod, or even good earth. A pig-sty properly managed will enrich a large strawberry bed, and I find my pigs, in working over weeds, leaves, and rubbish into strong manure, are worth more to me than their pork. A crop or two of green clover or buckwheat plowed under is most excellent.

But suppose the land designed for strawberries is in stiff sod. In this case there must be patience and one makes haste slowly. A year, or at least several months, must intervene before the

ground can be suitably prepared. In the first place there must be time for the sod to decay thoroughly, or else there can be no deep plowing and clean culture. The grass and weeds will be almost sure to master the strawberries. But in sod land there is usually another enemy even more fatal than half-subdued grass and weeds—an ugly customer with the portentous name of Phyllophaga Quercina. The name is bad enough, but the thing itself is much worse. You need not draw a breath of relief, when I tell you that I mean only the white grub, the larva of the May-beetle that so disturbs our slumbers in early summer by its sonorous hum and aimless bumpings against the wall till it falls down back of the bed and then commences to crawl till our flesh is ready to creep also. This white grub, which the farmers often call the potato worm, is the most formidable foe the strawberry has, and often makes a clean sweep of them by the acre. There is scarcely any remedy. The only way is to prevent, and this method is directly in favor of a larger ultimate success with strawberries. Put sod land in corn, potatoes, or any hoed crop for a year, and if you detect traces of the white grub, for two years, and stir the soil as often as possible. Our Phyl—etc. beetle seldom lays its eggs in plowed ground, preferring grass land where the larva will be protected from the birds.

But if one is in haste for strawberries he may set them out in August or September after some early crop which has stirred the soil well. But if the plow turns up the white grub we advise waiting at least till the following spring, stirring the ground several times and plowing deeply just before freezing weather. I had the good fortune this year to be able to plow, on the 3d and 4th of January, a piece of land infested with the grub. On the night of the 4th the ground froze solid and therefore I think that after a crop of early potatoes I can set out strawberries by the 1st of August, and thus get a fair crop in June, 1877. But if I find Mr. Phyl— and family in the ground ready to commence operations, I shall suspend mine, for I have learned from sad experience that he and his can eat off the roots of plants faster than I can put them out.

In order to have a supply of plants, it seemed necessary for me to occupy some land that had been in sod the year before. As this sod was very light and the soil free from roots and weeds, I was able to subdue it sufficiently by fall-plowing. But I could not so briefly subdue the white grub, and every day last summer found scores of plants wilting. On taking hold of them I would find every root eaten off, while an inch or more beneath the surface, peacefully reposing, was the gorged destroyer. Of course you can vent your vengeance on a few, but as to killing them all, in land where they abound, I would refer the reader to Mr. Dudley Warner's experience with "pusley."

This chief, and it might be added, only formidable, enemy of the strawberry, may be found in limited numbers in old gardens and where every precaution has been taken. When the plants are valuable it is best to dig the grubs out, and usually they are just below the surface early in the morning.

If it should so happen that one had bought a new place which was all in grass and wished to have a strawberry bed as soon as possible, I would advise trenching, and burying the sod, inverted, in the trenches, at least a foot deep. At that depth it would never grow and would make an excellent fertilizer. Then after enriching the surface he can set out plants and take his chances with the aforenamed grub.

But as a general rule let sod land have one or two years of thorough cultivation before planting it with strawberries.

Treatment of Different Soils and their Best Fertilizers.

The practical grower soon finds that different soils require diverse treatment. For instance, suppose one's land is of a light dry, sandy, or gravelly nature. It would be great folly to treat this as one would stiff clay. Here we should use cooling manures and add vegetable matter as fast as possible.

The cleanings of the *cow*-stable are by far the best, and if horse-manure is used it should be composted and rotted with

clay, muck or leaves. Rotted sods and leaves over which have been thrown soap-suds and slops from the house make an excellent compost and are greatly improved by the addition of wood-ashes. Indeed I think that there are but few sandy and gravelly knolls so dry and sterile but that a compost of leaves and wood-ashes alone scattered thickly over the surface so as to leach down with every rain, would make them profitably productive. Leaves are the natural fertilizer and mulch of the strawberry, and enough go to waste every year to make fertile every bed in the country. All light and heating manures tend to increase the natural dryness and lightness of the soil, whereas the constant aim should be to counteract this by adding the absent element of vegetable mould.

Now let us consider the other extreme, a cold, stiff clay that may even be inclined to wetness and sourness. This opposite kind of soil requires directly opposite treatment. Here light and heating manures are the best, and, in preparing the ground, may be carted directly from the horse-stable and plowed in. The tendency of this land is to bake, crack and grow very hard. If a compost, well decayed, of stable manure, leaves, etc., is spread and left upon the surface, it obviates this and keeps the soil mellow and porous. Plowing such land into ridges in November for the action of the winter frost is very beneficial.

But if the water occasionally stands upon, or two or three feet below the surface, there can be no certain success without thorough drainage. I have been doing a great deal of this during the present open winter and can recommend the "box-drain" where stones are plenty. My men build two rough-faced walls a foot high and a foot apart, and cover with large flat stones, chinking in carefully with small ones so that no earth can find its way into the drain as the ditch is filled again. This leaves a water-course a foot in the clear. Where there is not much water, the same form of drain of half the size will answer. This kind of stone-work is done rapidly, as two men in two short winter days built thirteen rods with a water-course six inches square.

Another rough cheap drain, when the flow of water is not great, is to set two stones upon the edges and lean them together, forming a kind of an arch, and then fill up with stones around and over them. This can be done rapidly and answers very well. When stone is not at hand tile no doubt will answer equally well.

We have thus given a considerable space to the preparation and enriching of the soil. This is the foundation of all certain success and here is just where the majority fail.

Having thoroughly prepared and drained the land, the next consideration is,

When to Plant.

The strawberry is so tenacious of life that it may be transplanted with care at almost any season; but there are times which are especially favorable. In northern latitudes spring undoubtedly is preferable, while at the far south October and November are the best months.

In spring, the ground is moist, showers usually abundant, and the impulse of growth is strong. At this cool season, the plants do not heat, or dry out during transportation, if packed with ordinary care. Land that is to be set with strawberries in spring should be thoroughly prepared the fall before, if possible. November plowing is especially beneficial where the ground is inclined to be at all wet or heavy.

The earlier they are planted the better. I make it a rule to set them out as soon as the ground is dry enough to work. Of course this term early is relative, and also depends upon the season. In 1875 little could be done in the open ground before May, and yet in other years I have had excellent success with plants set out in March. February is a spring month at the far south, and April a winter month in high latitudes. The safe rule in every region is to plant as soon as possible after the ground is dry enough. There is much to be said also in favor of summer

and fall. Plants set out in July and August, if kept from runners, produce a fair crop of extra fine fruit the season following, whereas plants set in spring should not be permitted to bear at all. Thus, much time is gained by summer planting. The following testimonials were secured by a bed of Monarchs of the West that I set out in August.

"I never saw such large berries in this country."—Mr. Ball, of Ball, Black & Co., New York City.

"Only in Scotland have I seen larger berries."—Rev. Dr. J. Forsyth, Chaplain West Point Military Academy.

"I certainly never saw so many strawberries growing together of such a uniform monstrous size."—Hon. John Bigelow, Sec'y of State.

Plantings made in September and even October often yield some good fruit the season following. Land on which an early crop has matured, instead of being left as a seed bed for weeds, can often be planted with strawberries to great advantage in July, August, or September. In our latitude plants set out even in November, if they survive the winter, start with wonderful vigor and make a much stronger growth than if planted in spring. I once set a bed of Charles Downings in November. Two-thirds of them died, but the few remaining soon made up the loss and covered the ground. Some prefer October and November for setting, and protect the plants by drawing a couple of inches of earth upon them just before winter and then uncover early the following spring. I have not tried this to any extent but know a gentleman who succeeds with this method on a stiff clay.

The chief difficulty in summer planting is the drouth and heat usual at that season. If there comes a showery time, as is often the case, this obstacle is removed. I set out a large number last summer and lost a far smaller per cent. than in the spring, which was dry. If one has plants upon his own place, and can take them up with a ball of earth around the roots, and water after setting, they will scarcely show they have been moved. Even plants coming from a long distance can be saved by some extra care. I sent away thousands, and chiefly

by mail, all through August and September last year and there were only a few complaints of losses. I expect to put out two acres next July or August.

Still, as a general rule and for large plantings, experience proves that it is safer to set out strawberries in spring.

Obtaining Plants.

If you have them, or can get from a neighbor just what you want, this is a simple matter. But there are multitudes who, like myself, in starting a new place and getting new varieties, must purchase at a distance. I find that sending to trustworthy dealers and paying a fair price, is by far the most profitable course. Some have a mania for getting everything cheaply, although they like to obtain good prices themselves. They quote to the regular dealer some very low terms that they have seen or heard of and ask to be supplied at the same rates.

There is a large class who cultivate a few of the leading varieties by the acre for their fruit. In the spring they *must* thin out their plantations to keep them in bearing condition, and are willing to sell the surplus,—and I might almost say refuse—at the time for anything they can get. But to make the low prices for this transient supply the standard for the regular plant-grower who at great labor and expense keeps pure and separate a large and varied stock, and is ready to fill an order at any time in the season, is both unjust and absurd. In buying new stock I go to men who have won a reputation and whose prosperity depends upon their keeping it—who will honestly try to sell me just what I ask for and believe that they are doing so.

I have heard of agents and transient men buying a large number of plants of a single kind and then filling all their orders from this one lot, putting on labels of different varieties to suit their customers. The established fruit-grower, even if he is not a gentleman, cannot afford any such trickery. Of course mistakes are made by the most careful, but they are mistakes and

not something else. Even though we do our best, trouble often arises. It is very easy to say that one's plants are pure, but not so easy to be sure of it until after they have fruited.

Though you buy your stock from the most trustworthy growers, through some mistake, or the carelessness of a workman, another kind is sent and put unsuspectingly among pure plants, or a few plants by some chance are tied up where they do not belong. You think your plants are pure but find as they come into bearing that they are mixed. I have so trained my eye, that I recognize the fruit and foliage of the leading kinds instantly, and if a plant even looks suspicious I now dig it up and throw it away, as I do also plants that produce poor and imperfect berries. I have more and more faith in careful selection, and in propagating from superior stock, and shall take special pains to carry out this principle on my new place. I wish to be able to say of my stock, I *know* it is pure.

Do not be deterred by distance from sending for what you want. Where but a few hundred plants are desired for home use the mail offers great facilities. In 1875 I sent more than 32,000 strawberry plants through the mails in addition to those forwarded by express, and there was but little complaint and loss even during hot weather.

Of course large orders and bulky kinds of plants must go by express or freight.

What kinds to Plant.

This is a question upon which few will agree and I do not hope for a general endorsement. But I shall give the best light on the subject I can, suggesting that the grower must learn largely by experience what kinds he can raise most profitably upon his soil and in his locality and with reference to his market. For the main crop I would advise that half or two-thirds of one's land be set out with Wilson's Albany seedling. This variety

is the strawberry wheat and will always sell at some price. There are but few regions where it cannot be grown profitably, and it certainly is the most abundant bearer of any variety yet generally known. On strong moist land it will produce enormous crops of fair sized berries. But if the ground is poor and becomes hard and dry during the bearing season the fruit runs very small toward the last, and scarcely pays for picking.

After the main planting of the Wilson, there are a dozen good varieties to choose from, and which of these are the most profitable will depend largely upon the nature of the soil, locality and market. If the soil is a good moist loam or inclined to clay, I would recommend Triomphe de Gand, Jucunda and President Wilder, grown in narrow rows. These varieties always bring high prices, but on light land and with ordinary culture seldom pay. On a thin sandy soil I would suggest Seth Boyden, Monarch of the West, Charles Downing, Kentucky Seedling, and Champion, adding that these strong growing varieties with ordinary care will grow and bear well on almost any soil. The Downer and Green Prolific flourish where a weed will, and few weeds can get the better of them. They bear abundantly berries that are tolerable for home use but too soft for market. They are good varieties for those who want strawberries without labor. On the other hand, for the amateur who is willing to pet his plants and keep all runners cut, the La Constant, Lenig's White, Black Defiance, and Kissena give beautiful and delicious fruit. There are also new varieties of great promise, the best of which to my knowledge are the Star of the West and Kerr's Prolific seedling. One of the largest, the latest and most beautiful berry that I have seen is the Pres. Wilder. To my taste its flavor is unsurpassed and it also brings the highest prices. It bears well with me, but requires a strong, moist, rich soil. It should have a place in every garden. For general culture after the Wilson I would recommend the Seth Boyden, Charles Downing, and Monarch of the West. I would also advise the trial of several other varieties, as the Colonel Cheney, Triomphe de Gand, &c., on a limited scale. The grower must learn by experience what

kinds he can raise with profit, for soil and locality cause more differences in the strawberry than in any other fruit. In some markets quantity is the main thing, but in New York fine quality and size secure the largest returns; I therefore am planting chiefly the large varieties. In order to have a long strawberry season, plant on a warm southern slope the Nicanor, Black Defiance, Wilson, and Triomphe, or other early kinds. The leading varieties that I have named will come in as the main crop. For late fruit select a *moist* soil with a cool northern exposure where the snow melts late, and set out President Wilder, Kentucky, Jucunda and Triomphe de Gand. While the last is early, it also continues late, remaining in bearing longer, if kept free from runners, than any other kind with which I am acquainted. New varieties may enable us to extend the season still more. The monthly Alpines will bear till frost, and in rich moist soil give considerable fruit in the fall.

I am more and more inclined to believe that even those varieties that bear perfect flowers, *i. e.*, both stamens and pistils, are rendered increasingly productive by growing near each other, so that the pollen, during the season of bloom, passes freely across the different beds with every breeze and is carried from one blossom to another by the honey-gathering bees. While I keep my beds far enough apart to prevent all intermixture by their running together I think that I get better crops by growing several varieties as neighbors.

How to Plant.

In the moist season of spring this is usually a simple matter, and careless work succeeds. And yet there is a difference between plants merely living and having them start at once into vigorous growth. Skill and care always pay, though they are not always necessary.

In the spring take a handful of plants, stretch out the roots straight and shorten them by cutting off at least one-third of their length. Where plants are bought, they often come tied in

bundles of fifty, and the work of cutting off the ends of the roots can be done readily with a sharp knife. Set out if possible on a *still* day. A cold dry wind is far worse than the mild radiance of an April or May sun. In any case the roots must be kept moist by moss or water till they are in the ground—the roots, not the tops. Many leave their plants in water till the life is soaked out of them. Do not plant when the ground is wet and sticky, unless during or just before a rain. If the sun and wind strike wet ground immediately after it has been stirred it often becomes like hard mortar. In the spring, and especially in summer and fall it is better to set plants soon after the preparation of the soil, before even the surface has time to dry. In the field harrow the land smooth, use a line if possible, or let some one mark out with a plow who is not like a man that once worked for us and planted corn so crooked that the crows could not find it. Let the rows for field culture be three feet apart and the plants stand one foot from each other in the row. At this distance 14,520 will be required for an acre. Spread the roots out as far as possible and put them down their full depth but do not cover the crown of the plants. Press the ground *firmly* around the roots. Millions of plants are lost by loose, careless setting.

In the garden where the plow will not be used the rows may be two feet apart instead of three and the plants one foot apart in the row. Or beds four feet wide can be made with a walk of two feet between them. Put three rows down each bed, planting the first six inches from the walk and the other two rows eighteen inches apart. If plants are scarce or high, they can be set three feet apart in the row and each one permitted to make two new plants which can be caused to take root in the row so as to leave each one a foot apart, which I think is the best distance. But to be sure of a good strong bearing bed the following season it is not safe to set the plants less than one foot apart in the row.

Even in spring, unless the ground is very moist and the time showery, it is well to give the plants a good sprinkling. If it is at all dry and hot, water thoroughly, and after the water has

soaked away, draw a little dry earth over the wet surface to prevent its baking and to retain the moisture.

In summer and fall planting there will be no trouble if we can hit upon a showery time. But it is not always convenient or possible to wait. If we are setting out plants from our own place, it can readily be done, except in a severe drouth, by taking them up with a ball of earth around the roots. Use a garden trowel or spade, cutting down on four sides so that the soil will not crumble away from the roots. With a hand barrow, or some boards nailed across two poles, a couple of men can take up a hundred or more at a time, and carry them without jarring to the bed where, holes having been prepared before, they can be put at once into their places. In this way I have set out large beds in the heat and drouth of August, scarcely losing a plant, and expect to set two acres next summer after taking off a crop of early potatoes. Of course the plants so removed need one or two liberal waterings and then dry earth drawn up around them the next morning. It should be done in the cool of the afternoon or upon a cloudy day. A few rows can be set out every evening, preparing the ground just before, so that it may be moist and fresh.

The same result can be secured with even greater certainty by another method. In most country homes there are small flower-pots lying idle during the summer, or it will pay to buy a hundred or more four inch pots. These can be sunk in the earth so that the rims are just below the surface along the rows from which new plants are desired, and the runners so guided that they will take root in the pots. If this is done the middle of July, by the first of August you will have strong plants that can be set out in beds to fruit the next year and the pots used in the same way again. From many growers potted plants can be bought in August, and unless treated with utter neglect are sure to grow. Plants set out by either of the above methods in summer or early in fall yield a fine crop of splendid berries the season following.

But ordered plants often come by mail or express in hot dry

weather and there is no earth around their roots to give them a start. They should be opened at once and placed in a cool cellar with damp moss around the roots, or the roots buried in some moist shady place till evening. In the *afternoon* prepare the ground so that it may be fresh, and as soon as the sun is off commence setting. If the roots look at all black shorten them one-third as in spring, in order to stimulate a new growth. Otherwise we do not shorten roots in summer and fall. Mix good, fine garden soil with water till a sticky paste is made that will coat the roots as you dip them into it, then put them down their full depth in the moist soil, spreading them as far as it can be done, and press the ground *very firmly* about them. Water thoroughly, soak the ground and then draw over the wet surface dry earth. It is well to shade them for a few days by large inverted flower-pots, boards, shingles, old strawberry baskets, etc. A mulch of cut grass or litter of any kind that serves to keep the ground moist, is of value. I have had excellent success on a large scale by throwing a handful of coarse weeds on the top of each plant, being sure to remove them by five P. M. each day, and putting them back in the morning, continuing the protection till the plants start to grow. Then the danger is over unless it should be very dry, in which case the ground around them must be kept moist till rain comes. By the liberal use of mulch, this can be done quite easily.

With late fall plantings, as in spring, there is little danger from drouth and heat, but the plants often do not become sufficiently established to stand the winter.

I would suggest the general trial of the experiment of covering late plantings with two inches of earth in November or December according to latitude and then uncovering early in spring. Time and labor is abundant in the fall and plants which can be made to survive the winter start with almost double vigor in the spring.

But if one is going to plant largely and can get his land ready the work can be more easily and safely performed in spring than any other time.

Having set out our plants we next consider

Modes of Culture.

As a general thing our after treatment will depend upon our object—fruit or plants. With me a rapid increase of plants is the chief object from most of my beds. All I have to do in this case is to make the ground very rich, keep out the weeds and let them run, which they will generally do fast enough. They can be greatly aided in rooting however by keeping the surface loose and by top dressing with fine rich compost in July and August. Even those not rooted in October will make good plants by spring if the ground is well top-dressed, scattering the fine manure broadcast over the plants. When the variety is valuable I have them layered by pressing the young plant into the soil and drawing a little earth over it. But while raising plants is simple enough it is even more expensive to cultivate for fruit as the ground between the rows cannot be kept clean by mulch nor the cultivator, but must be weeded out in large areas by hand. Where plants are the object the land can scarcely be made too rich, and a top-dressing of wood-ashes and a compost of hen-manure and fine earth in the spring and just before rains during the summer, are great stimulants. Where these cannot be had, guano and bone-dust are excellent. But these strong concentrated manures must be used with care or they will burn the plants like fire. It is usually best to mix them with ten times their bulk of earth or muck, and scatter the compost around, very near, but not on the vines.

I shall keep my beds free from old plants by stretching a line along the old rows about the 1st of September and spading them deeply under. After strawberries have been grown upon a piece of land about four years I shall turn all under as soon as they are done bearing and sow buckwheat and plow this under as it comes into flower. The following spring I shall plant potatoes, corn or a root crop. And after the land has had the rest of change plant again in strawberries. Raspberries or any other of the small fruits can be planted with advantage on ground that has been in strawberries.

With the majority, however, strawberries are raised solely for the sake of their fruit. As a general thing it requires considerable time, and extensive and therefore expensive advertising to build up a profitable business in plants.

What is the best method of culture where fruit is the chief object? I will briefly give that one which most pleases me, and then name some others which may be better and more satisfactory to the grower.

For the field I prefer that the rows be three feet apart, and the plants one foot apart in the row. If set out in spring, keep the plow, cultivator and hoe going among them so that the ground is always loose and free of weeds. Let no runners grow. If you want new plants of the variety, set out a bed for the purpose and let them cover the ground. There is no such excessive labor in keeping off the runners as many suppose. A little boy or girl with a pair of shears, by going over the plants once a week, in the running season, will keep a very large area free. When there are children in the family, the work is so light as to be almost play; and if they are paid something, the satisfaction of earning money for themselves will change the task into a pleasure. Where many are grown it will pay well to hire one or two good boys and they will keep acres clipped. There is no need of putting high-priced labor at the work. Thus the plants, whether set in spring or fall, are permitted to make no runners unless the varieties are very scarce. Even if they are, I keep a few hills or rows clipped to see what they will do with good culture. It must soon become obvious to those who have studied the habits of most varieties of strawberries, that a plant will expend most of its vitality in its effort to propagate itself. If the best results in fruit are desired, this vitality must be restricted to the one office of producing berries.

By fall, plants treated in this way touch each other and make a strong, bushy, continuous row. Of course if any of the plants die, I let enough run to fill up the spaces. By having but a single line of plants the plow and cultivator can run very close to them the first year, thus keeping the ground mellow and

moist and leaving but little hoeing and handwork. Pick off all blossoms and permit no fruit to form the first year unless it be on a *very few strong* plants of some new variety in order to get an idea of the quality. As the ground begins to freeze, I cover the rows two inches deep with light strawy stable-manure, leaves, or any coarse litter, but never with strong wet manure. Evergreen boughs, where they can be obtained with little trouble, make one of the best winter protections, and for a choice bed in the garden it is often well to take a little pains to procure them.

Early in the spring, before the plants begin to grow to any extent, dig or plow the spaces between the rows. After the plants are in blossom they must not be disturbed, unless the ground has been neglected and grown hard or weedy. In this case I believe it is better to loosen the soil with a small subsoil plow, fork, or long pointed hoe, get out the weeds, and put on a mulch, or they will smother the crop; and if there comes a drouth, the fruit will be small and almost worthless on hard, and therefore dry ground. But there should be no such neglect where people wish to succeed. Stir and clean the land between the rows and pull out all weeds as soon as the ground is dry enough to work; then level it down and put on the mulch at once while it is moist and mellow. Leaves, marsh hay, especially old dead grass from the rakings of the lawn, make an excellent mulch. Enough litter is burnt every spring to double the strawberry crop. Having put the mulch on two or three inches deep so that weeds cannot grow through it, the plants may be left till after the picking season is over. The mulch serves a quadruple purpose, keeping the ground moist, the weeds from growing, the fruit clean, and in wet weather enabling one to walk between the rows without miring or getting muddy. Berries that lie down in the mud and sand will not sell in any market, and for our own tables we prefer powdered sugar and cream to a mixture of rain water and earth.

If before or during the bearing season a few rampant weeds show themselves in the rows or elsewhere, they can be pulled out by hand. Do not hope to raise many strawberries and many weeds on the same ground. Virtue will fare just about as well

with rampant vice in the same heart. Both weeds and vices are fought best when they are little. Mr. Downing told me of a man who was noted for having one of the neatest and cleanest nurseries in the country. The secret of his success was that he kept stirring the ground so often that the weeds could not get started or established. At the same time he employed less help than others cultivating the same space. If, as is often the case on good ground and with some varieties, the plants commence running in June, let the little boy commence with his shears and continue to clip off all runners as long as they form.

The mulch can be left between the rows, keeping the weeds from growing during the busy season. About the first of September the mulch will be quite rotten and the weeds pushing through it. Now spade or plow it under and weed the rows out thoroughly. But the best results will be obtained by digging the mulch under as soon as the bearing season is over and cultivating between the rows till the plants are again covered for winter. This turning under the mulch in July, August, or even September, will so renew the plants that by winter they will be stronger than ever and give even a better crop the ensuing year. Beds thoroughly cleaned in September will scarcely become weedy before winter and can wait till spring before another weeding. Thus with a heavy mulch between the rows, two thorough cleanings a year will keep them in good condition in most cases. As the ground begins to freeze give winter protection as before.

This treatment can be kept up from three to six years, according to the variety. The Triomphe de Gand would continue productive even seven years, I think.

As soon as the plants of any kind begin to fail, dig or plow all under and make a new bed somewhere else. Do not keep a strawberry bed ten or fifteen years in the same place, saying with an acquaintance of mine, "It is more convenient there than anywhere else." Nature in this respect is justly called a "dame," and her will is not to be trifled with. She has a feminine love of variety and gets tired even of strawberries after a time. If one aims, therefore, to put his beds not merely where they are

convenient, but where he will get fruit, he will move them around as often as possible and give the land the change of a different crop.

The "hill-system" is similar to the above only the plants are kept farther apart, so that in some cases the cultivator can go between them both ways. I do not think, as a rule, any larger fruit is obtained by this method than from the narrow and continuous row, and there are grave objections to it. It leaves too much space unoccupied. It is difficult to mulch these wide open spaces so as to keep the ground moist. These unproductive spaces are apt to be widened by plants dying. In the single row system if a plant dies a runner can be allowed to take root at once in its place.

What is termed the "annual system" has great advantages, especially where one has plenty of land and can shift his beds often. In this case the soil is made very rich and the plants are put out in spring. The spaces between the rows are cultivated and kept clean until the runners start strongly and then these are left to cover all the ground, which they will do by fall. On the approach of winter the entire surface is covered with marsh hay, leaves or strawy manure, the coarsest of which is raked off in spring and stacked for future use. Some employ straw cut into inch pieces which is left on the ground, the plants growing up through it. Pine leaves or needles are an excellent mulch or winter protection. After the winter covering is taken off, paths a foot wide are cut through the beds for the pickers and the rest of the plants are left to fruit. Immediately after bearing they are plowed under and the following year a crop of corn or potatoes is cultivated, and then the next spring the land is set with strawberries again. Thus only one crop is taken from a planting. This is found a very profitable way of cultivating certain varieties like the Hovey, Wilson, Charles Downing, etc. But it will not succeed well with the very large varieties like the Seth Boyden, Monarch, Jucunda, and Triomphe, etc. In land that is inclined to be very weedy and grassy or to become hard if not stirred and mulched, I fear these closely matted beds would disappoint in hot, dry seasons.

Mr. Wm. Parry, who is one of the most practical and successful horticulturists on a large scale, in New Jersey, gives the following as one of his favorite methods of culture :

"A plan that has given good satisfaction with me is to open furrows 2½ feet apart, and spread a preparation of equal parts of marl, ashes and ground bone along the furrows, after it has been mixed and incorporated together for ten days or two weeks, until the heat, generated by the action of the ashes and marl, has mellowed and softened the bone so that the particles will crumble like chalk when rubbed between the thumb and fingers. Using one ton of the ground bone, and the same quantity each of ashes and marl, on five acres, will give a vigorous growth of dark green foliage to the strawberries.

"The ground being frequently stirred with horse and cultivator close to the rows, leaves but a small portion of the ridge between the plants to be loosened with the hoe. As the runners extend and widen the beds, the cultivator is made narrower ; and care being taken to pass along the alleys every time in the same direction, drawing the runners always in one way will leave them more even and regular than if drawn both ways by going back and forth in the same alley. The plants then form ridges about 18 inches wide with alleys one foot wide between them. This plan is more certain and reliable than keeping the plants in hills and cutting off the runners. There is less hand labor, most of the cultivation being done by horse-power, and if some of the plants should be destroyed by grubs or insects, there will be enough left to produce a good crop of fruit.

"At the approach of cold weather or beginning of winter give them a good coat of stable manure, spread evenly all over the plants. If the rows are 2½ feet apart, a horse and each cart wheel will follow along an alley without injuring the plants. *The covering with manure is of great importance*, as it protects the buds and embryo fruit from severe freezing, and prevents the roots from lifting and heaving out as the frost leaves the ground. The rains, soaking the strength of the manure into the soil, give food and nourishment to the roots. The straw and coarser materials, being bleached and beaten close to the ground by the winter's snow and rain, do not prevent the young growth from coming through in the spring, but serve to keep the fruit clean in summer."

I should regard this method as peculiarly adapted to Mr. Parry's land, which is a very light, sandy loam, in no danger of baking or becoming hard, and not greatly troubled with grass or white clover, I should judge.

But I think that in most localities the method first described

if faithfully carried out will give the most satisfaction and profit, especially in the garden.

As the cultivator grows in experience he will try methods of his own and modify others to suit himself. One method however will always be exceedingly popular. People will buy good plants but let them stand around in the wind and sun or moulding in the cellar until much injured. Then they will set them out on poor, half-prepared ground and leave them to an unequal fight with grass and weeds till picking time when the wretched crop will lead them to berate both the plant-dealer and strawberry culture as arrant humbugs. They will then plow the half-choked plants under and return to their congenial crops of cabbage, corn, etc.

Raising new Varieties.

If one wishes to raise new varieties he can do so in a haphazard way very easily. Select very fine berries of the different kinds which contain the qualities which are sought to be united in a new variety and mash them into dry sand so that all moisture is absorbed. Prepare a seed-bed of rich fine soil in a half-shady place, sow the mingled sand and seed at once and sift through a coal sieve fine rich earth upon them till they are covered one-quarter of an inch. Keep the seed-bed moist and in four weeks the little plants will begin to appear. On the approach of winter cover the young plants with one or two inches of straw. In the spring put them out eighteen inches apart each way and number them. Keep off all runners. A few may bear the first year, but you cannot tell much about them till the second. Then you can thin out your seedlings very fast, for most of them will prove far inferior to those now in cultivation. A few may be pretty good. Two or three *may* be excellent. One or two may possibly be first class, even better than anything known. But the probabilities are that out of 1000 seedlings you will not get one as good as many varieties we now have. Raising new seedlings is an innocent and useful form of gambling in which blanks are

innumerable. But to draw a prize like the Chas. Downing or Seth Boyden is a good thing for the whole country as well as for the fortunate possessor. Seedlings of promise should be taken up with a ball of earth and set by themselves where they can spread and be tested more fully. When in blossom note and mark carefully whether the flowers are pistillate or perfect. Flowers which possess both stamens and pistils and which fertilize themselves, producing fruit without the aid of another variety, are termed "perfect."

The mysteries of scientific hybridization and forcing under glass do not come within the scope of this practical hand-book. For these and kindred topics, the history of small-fruits, and full lists of varieties, few of which are in general cultivation, I refer the reader to the valuable works of A. S. Fuller and others, which can be bought at the office of the American Agriculturist, 245 Broadway, New York.

At the close of this manual will be found a chapter on picking, preparing small-fruits for market, and the best packages for shipping.

Varieties.

I will close this chapter on strawberries with a description of some of the leading kinds that are now in favor.

Monarch of the West.—The largest of all; fruit enormous, and averaging large to the last. I picked one berry that measured 7 inches around, and others 6½, 6, and 5 inches. It is also the most vigorous grower I have seen. Though so large it has a very fine flavor and a delightful aroma. With me it has proved a good bearer on both light and heavy soil, and I have seen it loaded with fruit on the New Jersey sand. A superb variety for home use, but a little soft I fear for distant markets. With a near market and with careful handling it will bring the highest prices.

Seth Boyden (No. 30).—This is still one of my chief favorites. Though a comparatively new variety, its reputation is

now established as one of the very finest. It certainly is the sweetest of all the large berries, and for home use cannot be surpassed. It scarcely requires sugar, and yet is far from being insipid. It is one of the strongest growers and very hardy. With slight protection, it will stand the severest winters. Berries immensely large, very many under ordinary culture measuring four inches around, and some five. A good bearer. I have sold many bushels in New York at 40 cents per quart, and they retailed at 50 cents. I have disposed of many thousand plants of this kind, and, though soil, locality and culture make a great difference with every variety, I am hearing from all quarters, golden opinions of the "Seth Boyden." A gentleman who has tested hundreds of varieties, places it as second best on his long list, after a careful comparison in the fruiting season. He regards the "Monarch of the West" as the best on his sandy soil. A friend writes that he picked as many quarts of "Seth Boyden," from a half acre as from the same area of Wilson, kept carefully in hills, and adds that they carry excellently to market. I find that they "stand up" among the best. Many complain of the "green tip," but if they will only leave them till ripe, they will find no "green tip."

Charles Downing.—One of the best varieties grown. Fruit large and abundant. The more I see and hear of this kind the more I find in its favor. It is extremely vigorous, hardy and productive. It seems to do well on any soil, and is excellent for home use, but soft for distant markets.

President Wilder.—Locality seems to make great differences with this variety, but upon my soil I regard it as one of the best. It is with me exceedingly large, quite prolific, and one of the very latest. It is the handsomest berry I have, and in color, shape, and flavor cannot be surpassed. It carries to market well and brings the highest prices. But in some localities I am told it does not do so well, and I have seen it looking poorly. It requires good soil and thorough culture. I like it better every year.

Triomphe de Gand.—An old, well established favorite. If I were compelled to raise but one strawberry I would choose this variety, for the reason that it remains so long in bearing, and has also the good qualities of being large, firm, of a sweet, rich flavor, and a good bearer. But it requires high culture and the runners well cut. A bed of Triomphes, well cared for, will last longer than any other kind I have known.

Champion.—A very promising new variety. Fruit large, and of a spicy acid flavor. Plants very vigorous and exceedingly productive. I have fruited it and have seen large beds in bearing, and it bids fair to be one of the best. Season medium to late. It must be planted near other kinds, as it will not bear alone. Last season's fruiting has greatly increased my confidence in this variety.

Wilson's Albany Seedling.—The most abundant bearer in existence. I have known single plants to produce over 400 berries. It is the great market berry, of medium size, firm, and very acid.

Jucunda.—A superb variety if you can obtain it pure and right, which I have found considerable difficulty in doing. I had a bed in full bearing this year, which I know to be pure, and a more beautiful sight I never saw in the way of strawberries. Fruit enormous, bright colored, and firm. It should have rich soil and runners cut.

Black Defiance.—A very large, dark colored, high flavored berry; excellent for home use. Too dark for market. Only moderately productive with me.

Lady of the Lake.—A very fine berry and worthy of a place in all collections.

Lenig's White.—A beautiful and delicious white berry with a pink blush. It is a strong grower and hardy, but should be kept rigorously in narrow rows. It is a shy bearer at best.

Late Prolific.—Neither late nor very prolific with me, but

well worth a place in an amateur's collection. Large, showy, and of a sprightly acid flavor.

Matilda.—A large, showy berry, fruitful, vigorous in its growth, and like its parent the Jucunda requires a deep rich soil.

Colonel Cheney.—As a market berry this variety is coming into favor, and is said to be very large and handsome. I shall test it quite thoroughly this coming season. I know that it is a good grower. Its flowers are not sufficiently perfect to bear well alone and it is well to plant Wilsons on either side.

Kentucky.—One of the very best late strawberries, of bright showy color, a moderate bearer. The flesh is pure white and of excellent flavor, and the fruit large.

Agriculturist.—Very large, irregular, with a long neck and inclined to be flat and coxcombed in shape. It does best on a light soil. With me it was prone to decay and scald. It is rather soft for market.

Nicanor.—A medium to small, bright colored berry, very early—the earliest that I have seen, hardy and productive.

Downer's Prolific.—The lazy man's berry. Medium to large, soft, acid, highly perfumed, early, hardy, and an enormous bearer.

Green Prolific.—Another lazy man's strawberry, as it will grow where a weed will and produce plenty of fruit, such as it is, soft, acid, large, and of a pale crimson.

Dr. Warder.—A large, long pointed berry, very firm, late, fine, but with me a moderate bearer.

Hovey.—An old variety and still much esteemed in some localities, especially near Boston. It is large, conical, bright crimson, and of a good sprightly flavor. It will not bear by itself, as it is a pistillate variety.

Russell's Prolific.—Very large, deep scarlet and of good quality, doing best on light land.

La Constant.—A beautiful and delicious berry, but requir-

ing the richest soil and highest culture with runners cut. A fine fruit for the amateur.

The monthly bush Alpines, white and red, should also find a place in the garden, since upon rich, moist soil and with clean culture they will supply the table until frost.

If any enjoy a musky flavor let them cultivate a bed of Hautbois.

This is but a very partial list. There are hundreds of old varieties which in the main have gone out of favor. There are also scores of new ones, very few of which, notwithstanding the enthusiasm of the originators, will ever become established favorites. I shall test these new comers and report accurately on their behavior with me. The two most promising new varieties with which I am acquainted are the following. The first is thus described by a trustworthy grower who has fruited it:

"The two Great Strawberries now claiming attention are the STAR OF THE WEST and the MONARCH OF THE WEST. The latter has been fully described, and largely planted for market; one grower, after proving its good qualities, planted ten acres.

"The Star of the West, more recently introduced, is destined to rise far above the Monarch. It has large strong foliage of a dark green color, leaves moderately serrated, with strong fruit-stalks, blossoms perfect, fruit uniformly large, measuring three to four inches in circumference, bright deep red, smooth, firm flesh of delicious quality; very productive, carries well and will be in great demand."

Kerr's Prolific.—This is the new variety upon which I promised a report in my spring circular, and I am glad to say that it is fulfilling its rich promise. It is a very vigorous grower, hardy, exceedingly productive, fruit handsome, fine flavored, averaging large. Of its market qualities I cannot yet speak fully. That is a question which experience must settle. If it is firm enough it will be a first-class market berry. The editor of the *Home, Farm and Orchard* says of it:

"We have had the opportunity from generous samples to test

the quality of this strawberry, raised by Mr. Robert A. Kerr, and we do not expect to find a better flavored or finer berry."

We have enough merely good berries. As the proverb goes, "There is always room at the top." If better varieties than we now have can be originated they will be most welcome. That any of the new and wonderful kinds that are now being trumpeted over the land are better, can only be learned by a careful trial, reaching through a number of years and over a wide and varied region of country.

But we have no cause to complain, for the long list of good and very good varieties is like the bill of fare at a fashionable hotel of which a traveler complained that it would take him a week to eat his way through it.

They who live without strawberries, certainly miss one of the best things that this old, thorny, and thistle-cursed globe can produce. Man's folly gave the devil a chance to plant his hoof on Eden, but he was not permitted to stamp it all out of existence, and one of the daintiest little bits remaining is ripe with us about the tenth of June.

RASPBERRIES.

I AM taking an increasing interest in this fruit, as the following, from the *New York Evangelist*, will suggest:—"Our friend, Rev. E. P. Roe, has on exhibition at the office of the *American Agriculturist*, 245 Broadway, seventeen distinct varieties of raspberries—Herstine, Hudson River Antwerp, Franconia, Highland Hardy, Saunders, Belle de Palluau, Belle de Fontenay, Vice-President French, Clark, Old Purple Cane, Brandywine, Philadelphia, Mammoth Cluster, Doolittle, Davison's Thornless, an unknown variety, and a *seedling* that promises to be exceedingly valuable, as it is as large and firm as the Antwerp, and stood out last winter without protection."

Why families are without this delicious and easily raised fruit is a mystery. It also promises to be increasingly profitable to those who are near good markets, as from its softness those at a distance cannot compete. Pears and grapes may be sent from California, but not raspberries.

The list of good raspberries is not by any means as long as that of strawberries; not that there are not a great many varieties in the catalogues, and many new candidates for favor which are, as yet, guarded by the sanguine proprietors as jealously as harem beauties, but there are but few of them which are known to be productive and vigorous, except in limited localities, and under very favorable circumstances. There is still great room for improvement in this fruit, and he who can originate a large, firm, bright colored berry growing on hardy, productive, vigorous canes,

and adapted to a wide range of country, ought to greatly advance his own fortunes, and certainly will confer a benefit on the public at large.

The Hudson River Antwerp has been regarded as the type of excellence, and, as it once grew, it has not been equalled by anything that I have yet seen. But even in its palmy days it flourished only in a limited locality on the western bank of the Hudson River. Immediately opposite, on the eastern shore, it could not be grown with profit. Even in its favorite haunts it has, of late years, failed greatly, though by some it is now thought to be recovering something of its old vigor, under high culture and upon new land. As it is such a splendid variety, the fruit always commanding the highest prices, I have set it out quite largely, intending to try wood ashes as a fertilizer.

I have a *seedling*, which much resembles the H. R. Antwerp in its fruit, from which I am hoping great things. But the plant itself is very different. It originated by chance, in an old garden in the city of Newburgh, N. Y. A fuller description of the locality will be given hereafter. Its roots were intertwined with those of an old grape vine and currant bush, and it has never had half a chance. But it produced such fine fruit as to attract much notice, and my cousin, Mr. T. Hazard Roe, was induced to mark and leave it for future observation. During the summer of 1874 it made a vigorous growth without any extra stimulus whatever, one of the canes attaining the length of fourteen feet. It received no protection at all throughout the very severe winter of '74–5, the canes merely being left upon the grape arbor. Its appearance during the fruiting season of 1875 is thus described by Mr. Bensel, editor of the "*Home, Farm and Orchard*," who carefully examined into the merits of this new candidate, and says: "Two or three years ago a raspberry plant sprang up in the garden of Mr. T. Hazard Roe, in this city, which was permitted to grow as a matter of curiosity and because it insisted upon growing. The seedling was not laid down nor otherwise protected during the winter, but each year increased the number of shoots, which bore fruit to the tips. The present season it is a most vigorous

plant, or hill of plants, one of the canes measuring fourteen feet and bearing large raspberries in their different stages of growth, in great profusion, along its whole length. This cane was unprotected throughout the last severe winter, and this is sufficient attestation of its hardiness. The wood bears all the appearance of the true raspberry, but is lighter in color than the Hudson River Antwerp. The berry has the beautiful color, and is the equal in size, of the Hudson River Antwerp; slightly conical; not quite so rich, to our taste, as the Antwerp; and hard enough when fully ripe, to bear carriage well. Mr. E. P. Roe, of Cornwall, we understand, will propagate and have charge of the plant which gives promise of such great usefulness."

I picked a basket of the fruit on a Friday afternoon, when it was somewhat damp from a shower in the morning, and not in the best condition to be tested, but after a ride of three miles the berries were in a fair state of preservation on Tuesday of the week following. I *think* it will be firm enough even for long carriage to market, and yet this question must be decided by further experience on a larger scale. It is much firmer than the Herstine and a larger berry. Chas. Downing has seen the plants in bearing, and considers the seedling one of fine promise, but with his proverbial caution and wide experience which make his opinions so valuable, says that it needs more testing under varied circumstances.

I am well aware myself that, like scores of others, it may disappoint all hopes. It takes kindly to its new home upon my Cornwall place. In the fall of '74 I removed some plants, and upon one left a cane several feet in length. It stood all through that bitter winter without protection, and the summer following, was loaded with the largest raspberries upon my place. I shall report upon it from time to time, stating its faults as well as good qualities. It is a week later than the Hudson River Antwerp, which, I think, is a good feature, as it thus follows early varieties and prolongs the season.

Two or three years ago it was thought that we had found in the Herstine, the coming raspberry, but while it is large, luscious,

and excellent for home use, I think it will be found much too soft for market. And this is the objection against many kinds otherwise good.

There are three varieties of red raspberries, however, that are widely coming into favor for market purposes.

I will name first the Brandywine or Susqueco, which is a very firm, bright scarlet berry, medium in size, or quite large with good culture. It is a rampant grower and suckers rapidly, though I have never seen it attaining much height. It is said to be perfectly hardy even in the latitude of Canada; and at the same time to endure the heat and drouth of the south better than even the blackcap varieties. Indeed it is a native of the south, having been found growing wild on the banks of the Brandywine, and the Indian name of this stream, Susqueco, was first given to it. It should be known by this appellation only, as "brandy-wine," in our day is too suggestive of chemicals and drugs. I find that in New York city both commission men and dealers on Broadway are very decided in its praise as a market berry, saying that it is the only one firm enough to be shipped to a distance.

The next berry in value is the Highland Hardy, or Native. As the Antwerp declined in productiveness and vigor, this variety took its place, and is now grown very largely along the Hudson River. It is indeed very hardy and vigorous. I have never known it to be injured by the winters that were severe upon what were considered hardy kinds. It is also the earliest red raspberry with which I am acquainted, and a most abundant bearer. The berries are small to medium, and carry well to market. Some of its growers in Ulster Co., N. Y., are making large profits per acre. While it is much inferior to the foreign varieties, it is infinitely better than no raspberries at all, and from the way it behaves with me, I should judge that it could be raised where anything will grow.

The most vigorous and productive foreign variety that I have seen, is the Franconia, a large, roundish-conical, firm, delicious berry that remains long in bearing. I have continued picking

from my canes five successive weeks. It requires winter protection and well pays for the trouble. Where this variety succeeds, it may be planted largely with confidence, as the fruit is first-class for home use or market.

The amateur will scarcely ask for anything better than Brinckle's Orange, where it can be grown.

We all know about the old fashioned blackcaps which we delighted to gather in childhood; and in moist, rich spots I have seen wild bushes clambering over a fence that produced as large fruit as any of the vaunted kinds sent out from nurseries with great parade. At least they seem so to me now, seen through quite a long vista of years. I know however that this kind of distance increases rather than diminishes the objects of our early wonderment.

The leading variety of this class is unfortunately named "Doolittle," which however has done so much that it ranks first in vigor and productiveness, and is the favorite for market. Next in value comes the considerably larger and later berry—the McCormick or Mammoth Cluster. With these two kinds one might be quite content. But there are others, and also new claimants, that are well worth a trial.

At the close of this chapter will be found a fuller list of those that are now somewhat prominently before the public.

Soil and Situation.

The red raspberries, especially the choicer kinds, prefer a rich moist loam, and will do well even upon quite a stiff, cold clay, if it is not wet. In every case there must be thorough drainage. Upon light, dry, sandy soil, the large foreign varieties cannot be raised profitably except quite far to the north, and in the south they can scarcely be grown at all, under any circumstances. But the vigorous native red raspberries, like the Susquecco and Highland Hardy, or the blackcap family, will flourish almost anywhere, north or south. Still, if one has a deep, rich, moist field or garden plot, there can be grown premium crops. Rasp-

berries are not so impatient of shade as the strawberry, and may be profitably raised in a pear, or young apple orchard, as their cultivation will help the trees.

The season can be greatly prolonged by planting early kinds on the south, and late varieties on the north side of a wall or piece of woods.

Preparation of the Soil, Fertilizers, etc.

What I have written under this head in the chapter upon strawberries applies, with modifications, to all the small fruits. Thorough preparation is the foundation of all certain success. As the white grub does not injure the raspberry, it is necessary to cultivate other crops before planting only long enough to thoroughly subdue the grass and weeds, and to deeply pulverize and enrich the land. Any good garden soil can be prepared for the plants at once.

For the foreign varieties, as the Franconia, the Antwerps, etc., there is little danger of making the soil too rich. But ground that will produce a heavy crop of corn will also yield large crops of the hardy native and black raspberries. But in every case there must be deep cultivation, thorough cleaning of the land, and draining where there is any inclination to wetness. There is not a garden in the country in which some varieties of raspberries will not thrive.

As a fertilizer, there is scarcely anything better than barnyard manure composted with muck that has been sweetened by a winter's frost. The land should in all cases, if possible, be prepared by deep plowing in the fall, and the manure can be drawn directly from the stables and mixed thoroughly with the soil, as at this cool season its heating qualities are an advantage rather than an injury. If barnyard manure cannot be had, muck, sweetened by the action of frost and mixed with lime, or better still with ashes, is most excellent.

In the treatment of different soils, light and heavy, the same principles apply here as in the case of strawberries. Close up

and deepen light and porous land with muck composts, rotted leaves and sods, and use light and heating manures for cold, heavy ground.

Bone-dust, poudrette, etc., composted with muck, sods and leaves, make excellent manures in every case. Top dressings of wood ashes are always good, but never fail to give the land *deep* plowing, or, in the garden, trenching, as this prevents loss from drouth.

Plants and Planting.

In stocking a new place, or in obtaining new varieties, plants must be bought, and, as we have said before, it is always best to purchase of trustworthy dealers. Most kinds propagate themselves rapidly, and a little later we will show how this process can be hastened. In buying, insist upon being furnished with *young* and well rooted plants.

Raspberries may be set out to advantage both in fall and spring. In our latitude and in most soils, I would prefer fall for the red raspberries which are propagated by suckers, and spring for the blackcap and purple cane varieties that are increased by roots forming at the tips of the canes.

My plan with red raspberries has been to purchase or take up the plants and set them out in October or the first week in November, if mild. Where the variety is very choice, I have quite large holes dug to the depth of eighteen inches and the bottom filled up with good surface soil. But in gardens and where the ground has been deeply prepared, this is not necessary. If I intend to cultivate them with horse power both ways, I mark out the ground into squares of four feet and put two or three plants at each corner, setting them in the ground one inch deeper than they were before. At this distance and where two plants are set in a hill, 5,444 are required for an acre. After I have finished planting, the ground is perfectly level, and in after culture should be kept so. I then sprinkle over and around the hill a shovel full or two of old rotted compost, which, leaching down

with the fall and spring rains, gives the young plants a fine start. I next cut off the tops or canes a little above the ground, and mound the earth entirely over them as winter protection. The frost cannot injure them, and the work of planting is done when usually we have the leisure to do it well. Early in spring, as soon as the hard frosts are past, remove the mounds from over the hills and leave the ground level.

Do not let long tops remain on the plants with the view of getting fruit the first year. Where this is done the usual result is few and poor berries the first year, and scarcely any at all the next. All the plants can do the first season is to establish themselves and send up canes for the next year's fruiting. Even where berries are desired at once, one or two buds left on the shortened canes just above the ground will produce more and better fruit than if the same canes had been left three feet high. I should judge that fall planting would be still more advantageous south of New York, but they will need the same protection, as there is more freezing and thawing where there is but little snow.

But in many localities, and especially to the north, spring planting answers equally well, if not better. But let it be done as early as possible, or else the little buds just above the roots, which make the canes for future bearing, will start to grow and thus be broken off in setting. The ground should be thoroughly prepared by deep fall plowing, and again plowed and harrowed in the spring. If all the preparation has been left till spring, let it be very thorough. Nothing is gained by haste and slighting. Do not plant when the ground is wet and sticky, unless it be just as a good rain is commencing. Press the soil down quite firmly around the plants, after filling the holes. Do not at any time, put manure in the hills so that it will come in contact with the roots. Spread it on top of the ground over them, and the rains will take it where it is wanted. Many a tree and plant is injured, if not killed, by placing green, strong manure directly upon the roots. But a top-dressing of manure of any kind is of great value to the young plants, both in fall or spring setting, as it gives them a good strong start at once. Old rotted compost has the best effect, and

wood-ashes are also excellent. Plants may also be set out during the summer, as will be explained under the head of propagating.

In our latitude, and to the north, the blackcap raspberries do better when set out in the spring. To the south, and in warm, light land, they thrive equally well after fall planting. These should be put five feet apart each way, as they are very strong growers. At this distance 1,742 will be required for an acre. While deep plowing and clean culture are as beneficial to these as to the red varieties, they do not require as rich a soil. Set them down so that the little bud which makes the new growth is one inch beneath the surface in heavy soil, and two inches in light soil. Cut off all the old cane.

Propagation.

The first effort of the young raspberry plant, after transplanting, is to become established, and next to propagate itself. About all it can do the first season is to take a good root hold upon the soil, and throw up one or two shoots or canes. But the second season the roots of all the red raspberries (except the purple cane family) which have been spreading laterally through the soil, show a tendency to throw up new shoots which are termed suckers. With some varieties this disposition is so strong that these suckers will fill up all the spaces between the rows, and choke the bearing hills. For most practical purposes the red raspberries will propagate themselves fast enough in this way, and unless new plants are needed, the suckers must be treated as weeds and all cut out with the hoe, save four or five in the hills.

But some varieties do not sucker readily, and in introducing new varieties it is often profitable to hasten nature's usual procedure. In doing this there is scarcely a limit to the results of skill and good management. The practised gardener who has glass forcing-houses, can take the smallest roots of a scarce variety and cut them into half-inch pieces, and from each one make a new plant. Then as they begin to grow he can take the new green wood of the little plants, and cut this into small pieces

which, in sand, and the warm humid air of the propagating house, speedily set up an independent existence. Thus from one plant thousands can soon be grown.

But even if we have no glass we can accomplish a good deal with root cuttings. Take up the plants that you wish to increase very carefully in the fall, following each root so as to get it all. Leave enough on the plants to start them well the next season, and then they may be set out again as before directed. Take the roots you have cut off and divide them into pieces three inches in length. Prepare a box by boring holes in the bottom so as to give good drainage. Put a layer of leaves over these to prevent the soil from sifting out, then a thin layer of fine moist earth. Upon this place a layer of the roots, next earth, then roots again till the box is nearly full. There should be two inches or more of earth over the top layer of roots. The box can then be buried upon a dry knoll beneath the action of frost; or it can be placed in a cool cellar where the roots will not freeze and where they can be kept moist, but *not wet*. In spring, as soon as the ground is dry and warm enough to work, the roots can be set out in rich, finely prepared soil. Set them slanting a little and in drills, four inches apart in the row and one inch deep. In light, porous land they can be put down two inches. A top-dressing of fine rotted manure will greatly stimulate the little cuttings. They should be covered about an inch deep with a mulch of straw or dead grass and, if kept moist by occasional waterings, nearly all will develop into good strong plants.

There is often advantage in summer planting which may easily be done at any time from June till August, if the plants are upon your own place. Have the ground which you wish for raspberries thoroughly prepared and ready early in June. Take up the young suckers that are from six inches to a foot high with a large ball of earth around the roots and put two in a hill. If this is done upon a rainy or cloudy day they go right on growing and make strong canes by fall. Thus a year in time is saved as these may be permitted to bear a partial crop the following season.

The blackcap varieties do not throw up suckers but are propagated by their tips taking root. This they will do to large extent themselves if not in an exposed position where they are whipped about by the wind. When new plants are desired it is best to layer the tips by covering them with two or three inches of earth. This is done with a garden trowel, and in our latitude, in August and September. The time to do it in every locality is indicated by the tips of the bushes swelling and turning purple. They will then readily take root if covered with a little soil. As new branches grow, bend over and touch the ground, many more tips will be ready to take root. If a large number of plants are wanted it will pay to go over them often in September and October, covering the ends. I have found it more satisfactory to leave these young plants in the ground till spring; but as has been stated before, they can be taken up and set out in the fall if desired. But in most localities the frost will throw them out if not protected by mounding the earth slightly over them and then uncovering early in spring. The bushes may be trimmed in winter if more convenient, as it does not hurt the young plants to be separated from the parent at this season.

Culture for Fruit.

In the garden where the plow will not be used, the plants may be set out three feet apart each way. If planted in the fall cover with earth as before directed. As early in the spring as the ground is fit to work, uncover and fork the ground deeply between the rows. I would recommend that the spaces between the hills be covered at once while the soil is loose and moist, with a heavy mulch of leaves, rakings of the lawn, or any coarse litter that will keep the surface damp and the weeds from growing. By fall the plants will have sent up new canes on which will be borne the fruit the coming season. In October the mulch can be dug under, and thus the soil is kept rich. About the 1st of November shorten in the young canes from one-third to one-half, and you will get more and better fruit and the plants will

be strengthened. If a cane is six feet high I would reduce it to four feet. If a cane is but three feet in height I would not leave more than eighteen inches to bear the next season; small canes show a lack of vigor which must be increased by pruning. If there are side branches, I would cut off two-thirds of their length. This is one of the cases in which we suffer loss through our avarice, and usually it takes years of experience to teach one to prune his raspberries and grapevines with sufficient rigor. I was once taught a very useful lesson in this respect. I had some raspberries which were called hardy. They were up to the point where the snow covered them—about two feet that winter, but the tops were killed. From those canes, but two feet high, we picked more and better fruit than from a row five feet in height that had been covered. Where the ground is rich and the canes vigorous I think that three and a half to four feet is a good height. Early in November or just before freezing weather, bend down and cover with earth all the foreign and half-hardy kinds. The best way to do this is to let a man throw a spade full of earth up against the hills on one side. Then let a boy bend the canes (all in one direction) gently down over these little mounds, which prevent their breaking by making too sharp an angle, while a man covers them with earth. The work can be done far more rapidly, by two men—one working on each side of the row, and by this method a great many plants can be covered in a day. It is best to cover them well, so that the rains will not wash the soil away and uncover the canes. Early in spring after the heavy frosts are past, first remove the earth on each side of the plants and then raise them by placing a fork carefully *under* the *ends* and lifting them gently.

Early in spring place stakes by the side of the hills with a crow-bar and tie up the canes at once, using soft but strong twine. Tie up the ends of the canes snugly as well as lower down, otherwise they break with the wind or their burden of fruit.

Next loosen the ground thoroughly between the rows with a fork, digging in a dressing of manure, and then mulch as before.

The tops of the raspberries are biennial, the roots perennial. The canes that were covered during the winter will bear the fruit and then begin to die. As soon as they are through bearing they should be cut out close to the ground, and carried away. In the meantime, the roots have sent up new canes which will bear the following season. In October the mulch can again be dug under, and the canes buried in earth just before the ground freezes. This method can be kept up a long time. Plantations of raspberries have remained productive for twenty years, but usually they begin to fail after ten or twelve. They should then be dug out and plantings made upon new ground, and three or more years elapse before returning them to the same spot.

From three to five canes are enough to leave in a hill. The number depends upon the vigor and branching habit of the variety.

If one does not like the method of cultivation by mulching, he can keep the soil clean and mellow by the frequent use of the hoe. I prefer a long blunt-pointed one that goes deeply into the ground without cutting the roots. But I think that in garden culture the mulching is of great advantage, not only in keeping the ground moist, mellow and rich, but in preserving the fruit from being splashed with mud by the heavy showers often prevalent at the time of ripening. I have seen many quarts spoiled from this cause.

Where the hardy varieties are raised, the treatment may be the same, with the exception of winter covering, which is not needed. If the blackcap varieties are cultivated in the garden, the plants may be set three feet apart in a single row. Twenty plants of the Doolittle, and the same number of Mammoth Cluster will abundantly supply a large family. If the latter can be placed in a cool moist place on the north side of a wall, the season of fruit will be greatly prolonged.

Field Culture.

After thorough preparation the plants of red raspberries may be set out in spring or autumn four feet apart each way, covering them on the approach of winter as before directed, if not hardy, and uncovering early in spring. We are now getting such good varieties of hardy kinds that it scarcely pays to plant the tender ones on a large scale, except in localities especially suited to them. As soon as plants are set out throw one or two shovelsful of rich compost over and around them. Keep the plow, cultivator and hoe at work, so that the ground is always loose and clean. If tender, cover just before freezing weather. This can be done rapidly by letting a boy bend them over, while a man fastens them down by a shovelful of earth. Then, with a plow throw a furrow over them upon each side, and go over them again with a shovel, to make sure that all are well covered. The hardy kinds will need no protection, although a shovelful of fine compost, thrown over the roots in the fall, will give them a strong start in the spring. Cut out the old canes as soon as you are through picking, as these are now worse than useless, and will absorb much of the root power in their slow decay, which should go into the new shoots. Put stakes of five feet in the hills the second year, and tie up the canes before the buds swell. As soon as the crop is gathered the stakes can be taken up and stored under cover. Chestnut wood makes the best stakes, and if the part that goes into the ground is charred a little with fire, they will last much longer. Stakes split out of heavy wood are more durable than round poles.

I do not believe in the method of dispensing with stakes. The bushes are often broken down by the wind or weight of berries, and muddy fruit gets into the basket and spoils the sale of the entire crop, giving the grower's brand a bad character in the market.

Unless new plants are wanted for use or sale, treat the suckers as weeds, leaving but from four to six in a hill, according to

the vigor of the variety. Where many suckers are grown, the best results in fruit cannot be obtained.

When a plantation begins to fail, higher manuring will reinvigorate it. Wood-ashes and muck are excellent stimulants. Mulching even on a large scale, where leaves or marsh hay is abundant, will often pay well, and help the plants greatly. Fields can also be renewed by letting suckers stand between the rows, and digging out the old plants. But after a time it will become evident that the land is exhausted of raspberry food and new plantings should be made elsewhere.

If blackcaps are to be plowed both ways, the stools should be five feet apart, but if the cultivator is to run only one way, let the rows be six feet apart, and the plants three feet in the row. If black raspberries are planted six feet by three, 2,400 will be required for an acre; if six by four feet, 1,742.

Varieties.

In the following partial list I have merely named those that are now more or less in favor.

Hudson River Antwerp.—Heretofore the great market berry upon the west side of the North river. It is very large, firm, somewhat dry, musky in flavor, early, and continues long in bearing. Where it can be grown it is the best of the foreign varieties. It has declined in vigor greatly for several years, suffering much from mildew, and general debility, not ripening its wood. It is therefore being superceded by other kinds in its old haunts, especially by the Highland Hardy. But I think it can still be grown profitably on new, rich, moist, but well drained soil. It once yielded enormous crops and brought its growers a great deal of money. It must be well covered with earth before severe frosts.

Franconia.—Perhaps the best and hardiest of the foreign varieties, but requiring winter protection. The berry is large, roundish, of good flavor and firm enough for market. It con-

tinues long in bearing, and where it thrives is very productive. Like all the foreign varieties it requires high culture.

Belle de Fontenay.—Some assert that this variety and the Amazon are identical. A large berry but not very firm, deep crimson, irregular, long-conical, and of good flavor. The canes are very strong and stocky, the young shoots producing a second crop in autumn. It is the best of the fall-bearing varieties. It throws up an endless number of suckers, which must be cut off as soon as they appear, if much fruit is desired. By cutting off the canes even with the ground in spring, the new shoots will produce quite a large crop in the autumn.

Belle de Palluau.—A bright crimson, large, obtuse-conical berry, of good flavor, firm and productive. I should think it might become one of the best of the foreign kinds for market.

Hornet.—Very large and fine, but very uncertain in most localities.

Brinckle's Orange.—The amateur's variety. Orange in color, large, obtuse-conical, and of delicious flavor. The canes are strong and the plant very vigorous and productive.

All the above varieties need careful winter protection and high culture.

Clark.—This variety is almost hardy, though its tops have been killed in my garden. If held down by a shovelful of earth, it will endure almost any winter. The fruit is large, especially if the canes are cut back rigorously, and of a sweet, rich flavor. It is too soft for market, but excellent for home use.

Philadelphia.—This is another variety that needs but little protection, if any, and where quantity rather than quality is desired, is one of the best to plant, as it is the greatest bearer I have seen. But the fruit is dark, soft, and of poor flavor.

Herstine.—A large, beautiful, fine-flavored berry, excellent for home use, but too soft for distant markets. It is productive and a very strong grower, doing well even on poor soil.

Saunders.—It resembles the Herstine but is usually not so productive.

Turner.—A favorite variety at the West. Medium to large, quite prolific, moderately firm, and ripens its crop early. It is said to be hardy.

Highland Hardy.—The earliest raspberry and very valuable on this account as well as for other reasons. It is very productive, perfectly hardy and thrives on almost any soil. The fruit is medium in size but improves greatly under high culture and rigorous pruning. It is fast becoming one of the chief market berries.

Brandywine or Susqueco.—This is probably the best of the red raspberries for field culture and has already been quite fully described.

Blackcap Varieties.

Doolittle or American Improved.—Large, juicy, if well pruned and grown on good moist land, very vigorous and enormously productive. It is the best for the general crop.

McCormick or Mammoth Cluster.—Very large and a week or ten days later than the above, a very strong grower and exceedingly productive. One of the best.

Miami.—Resembling the Mammoth Cluster but not equal to it in value. It is brighter colored and may therefore fare better in market.

Davison's Thornless.—The earliest blackcap that I have seen, and almost free of sharp spines. It is of value for the garden, but not sufficiently vigorous and productive for field culture.

Fay's Thornless.—Said to be better than the Davison.

The Ohio Ever-bearing.—Large and of good flavor; a strong grower, the young canes producing a moderate crop in autumn.

Early Cluster and Ontario.—New and promising seedlings.

Ganargua.—A hybrid between the red raspberry and black-cap, and is said to be hardy, early and productive. The berry is large, firm and fine flavored, but its color will prevent its becoming a favorite in the market, as it is neither red nor black. It is a strong grower, and is propagated from the tips.

Norwood.—A new variety that is highly spoken of in some quarters, and slightingly in others.

There are new varieties of great promise which must be tested still further before any correct opinion can be formed concerning their merits. First among these I place my seedling,

The Pride of the Hudson.

But pride often has a fall, and my promising berry may soon pass out of notice. It certainly shall if it does not prove worthy of its name, for never shall I consciously commend a poor fruit; and if it be my own, I shall be still more critical. The Cuthbert and Delaware raspberries have been spoken of very highly, and I hope to be able to report upon them and others from time to time.

If one wishes to raise new varieties, let him select the finest berries when fully ripe and mash them in dry sand till all moisture is absorbed. Sow the seed in the fall about one-fourth of an inch deep, and sift over them some finely pulverized muck, the greater part of which should be raked off again early in spring. What the seeds require is slight covering of very fine, light soil which must be kept moist and at the same time have no tendency to bake or become hard. They will then germinate early in spring. Protect the young plants the following winter and set each one out singly the following spring; number them, and in about three years from the time of sowing you can learn the value of the new varieties. The subject of picking, marketing, etc., will be treated hereafter.

CURRANTS.

THE culture of the currant is becoming increasingly profitable every year. The briefness of this chapter does not indicate my estimate of the value of this fruit, but its cultivation is so simple that but few words of direction are necessary. A deep rich soil, clean culture, mulch, and the pruning knife are the secrets of success. Straggling currant bushes along old fences and half-smothered by grass and weeds are not the models to be recommended. It is pretty hard to kill a currant bush, but only by the following methods can paying crops be raised in the garden or field.

A moist, heavy soil is the best, but high manuring and mulching will make any answer. It is difficult to enrich the soil too highly as the currant is a gross feeder and not particular as to quality. Wood-ashes however are specially excellent. Deep plowing in preparation, clean culture and mulching, will go a great way toward making up for lack of fertilizers.

Set the plants of the white and red kinds four feet apart each way and keep them in shape and bounds by pruning. At this distance 2,722 will be required for an acre. During the first two years let the spaces between them be kept clean and mellow by the frequent use of the plow and cultivator, keeping the ground level. The third year a paying crop may be expected. Let the ground be thoroughly cultivated and cleaned as early as possible in spring, working in a heavy top-dressing of compost or any manure that can be had. If a mulch of leaves or any kind of litter can be put on at once while the

ground is fresh and moist all the better. But if such material is not at hand, give the ground in the garden a thorough hoeing or light forking early in June, and then scatter over it, between the bushes, a mowing of coarse weedy grass that is not fit for hay. Where currants are grown largely I believe it would pay to raise orchard grass for the purpose of mulching. This starts early and a heavy burden can be mowed even in May. Mulch, by keeping the ground moist, largely increases the weight of the crop. In the South and upon light soils it is indispensable to any profitable success. Moreover, where it is not used the fruit is generally badly splashed with mud, and only clean handsome fruit brings paying prices.

As any part of the wood becomes old and unproductive cut it out. Keep the bushes thinned, strong and vigorous. Six or eight stocky shoots will produce more and better fruit than a much larger bush full of thick tangled branches and old wood through which air and light cannot circulate. Cut out in spring all the young suckers except what are needed for the renewal of the plants. Bushes usually become unproductive through over-crowding of young and old wood, till at last there is little else save wood and leaves. Strong and long shoots of new wood should be shortened in the fall or early spring, and this young growth employed in producing new plants.

Propagation.

The currant can easily be increased by cuttings. The best time to make these is the last of September, or as soon as the wood is ripened. Take only the young growth of that season, cut the shoots into lengths of six inches, strip off the leaves at once, if they have not already fallen, set the slips out in rich, moist, but well-drained land. Sink them down so that only three buds are left above the surface. Let them be in rows two feet apart and six inches in the row. Top-dress with fine old manure, if possible. By winter they will be quite well rooted, and in the following season will make a very strong growth. When two

years old they will be fit for sale or home planting, while many one year plants are sold, and if vigorous are just as good, if not better. Where a market can be found, the raising of young plants is a profitable business.

While the best results are secured from early fall cuttings, they can be made any time before winter and placed in the ground as directed above. I have found it advantageous to mound the earth over them, covering them completely, and then uncovering early in the spring. This prevents the frost from throwing them out. If it is not convenient to set out the cuttings in the fall, they can be tied in bundles and buried in the open ground just beneath the action of frost. Put them out in rows as early as possible in the spring. Cuttings can be made any time during the winter and buried in a cool cellar, keeping them barely moist enough to prevent their drying out. Or they may be taken from the bushes early in spring, and if set out in moist land, will generally live, but do not make as good a growth as those planted early in the fall.

The old fashioned way of layering or bending down branches in spring, and throwing earth upon them here and there never fails, but the plants are not as nice as those produced by cuttings.

Enemies.

The currant has two enemies which in some seasons and localities, if not interfered with, are very destructive. The more formidable one is known as the currant worm. It is about an inch long, bright yellow, and dotted with small black spots. These worms are very voracious and will strip the bushes of foliage before one is aware of their presence, if not on the watch for them. The remedy is a thorough dusting of *white* hellebore upon the leaves when they are wet with dew; or better still, put two ounces of white hellebore into a pail, and pour upon the powder a quart of boiling water. After it has stood a few moments fill up the pail with cold water, and apply it to the bushes with a

syringe. The liquid kills every worm it touches. Applications should be continued while any of the pests remain, and if attacked in time they can soon be destroyed.

The other enemy is a worm called the currant borer, and its presence is known by the wood shriveling, or the foliage turning yellow. Cut off the infested branches close to the ground, and burn them. If currants are grown in bush form, which is the better way, they can seldom destroy a plant, but when the plants are pruned into miniature trees with a single stem, the borer is often fatal to them.

The same general principles apply to the culture of black currants, only bearing in mind that being larger and coarser in their growth, they require more room, and need less pruning.

Varieties.

There are but comparatively few kinds of currants worth cultivating, except as the amateur amuses himself with variety. I shall merely name those which are best, and which furnish all the qualities desirable for home use and market.

Old Red Dutch.—Too well known to need description. But if those people who leave their bushes to fight with grass and burdocks, and to fruit upon the same wood for generations, should happen to see this old friend enjoying good cultivation and rigorous pruning, they would declare that it was a new and choice variety. I have been told of instances where the common Red Dutch was sold in market for Cherry currants. There is scarcely a fruit which high cultivation improves more, and it is an open question whether it is not the most profitable kind to raise, since, from its enormous bearing qualities, what is lost in size and showiness is made up in weight. I find that many are inclined to think that if it received as good treatment as Cherry and Versailles, it would be equally profitable. It is also one of the sweetest and best flavored when fully ripe.

Cherry.—The largest and most showy of the red currants,

and the great market variety. It is acid and not first quality in flavor, but its beauty and size make it the favorite for market. The bunches are very variable, some being small, and consisting of only two or three berries, others quite long and large, but not tapering like other kinds. It is a coarse grower and gross feeder, requiring rich soil and high cultivation. The young shoots are very strong and stocky. The bushes need a great deal of judicious pruning, for the old wood has a tendency to become naked and barren. But in most localities it is one of the most profitable crops that can be raised.

Versailles.—If this is a distinct variety, it resembles the Cherry so closely that it is difficult to tell them apart. It is claimed that it is not so acid, and that the bunches are longer and more tapering. Even so high an authority as A. S. Fuller writes:

"Although I am not ready to say positively that there is no distinct variety to which the name Versailles belongs, still I have not yet been able to obtain one in which really distinct and permanent variations can be discovered. I shall be most happy to receive any information from other growers which shall enable me to decide this very perplexing question." Mr. Downing says that the difference consists in some of the bunches of the Versailles—not all of them—being longer and more tapering than those of the Cherry.

I have made two large plantings from stock that came originally from Charles Downing's place, and which I know to be pure, and shall carefully observe all differences. But those purchasing the Versailles with the expectation of getting something very different and much better than the Cherry should be undeceived.

Victoria.—This is a valuable late variety, large and of bright red color; acid, but of good, sprightly flavor. The bunches are very long, and the plant moderately vigorous and exceedingly productive.

White Grape.—The best of the white currants, large, trans-

parent, very beautiful. It is sweet and juicy, and of excellent flavor. The plant is quite vigorous and very productive.

White Dutch.—It resembles the Red Dutch, with the exception of color. It is claimed that the berries are larger and sweeter and the bunches a little shorter. The plant is very vigorous.

Black Naples.—Very large, black and of a sweet musky flavor; a strong grower and productive after the bushes have attained some size and age.

There seems to be an increasing demand for black currants, but white varieties find but a limited sale, though the best. For home use the latter should always be cultivated.

Buist's Long-Bunched Red, and Fertile de Palluau might be added to the list, but for all practical purposes the above described varieties are sufficient.

GOOSEBERRIES.

THE treatment and propagation of the gooseberry is almost the same as that of the currant. Success depends upon deep and thorough preparation of the soil, abundance of fertilizers, and rigorous pruning. Unless the plants are kept growing vigorously the fruit soon deteriorates and mildew is more likely to ensue. Cool northern exposures and deep, moist soils should be selected when possible.

Cuttings can be made in the fall, but succeed equally well, if not better, when made early in spring, as the wood of the gooseberry is slower in ripening than the currant. When the plants are large enough to set out, put them four feet apart each way. They can be pruned to a single stem if desired, as the borer does not often disturb them. But I prefer the bush form, as it gives more opportunity for renewal with young wood. As the bushes grow in size keep them thin and open so as to admit an abundance of air and light. As the wood becomes old and unproductive, cut it out.

The gooseberry, even more than the currant, is impatient of weeds and slovenly culture. Hardness and dryness of soil is especially injurious, and therefore mulching is of very great advantage.

If the currant worm appears on the foliage it should be destroyed with hellebore as I have already directed.

Mildew is the great foe of the gooseberry in this country, and often attacks not only the fruit but the plant. There is no certain remedy, and it is best to plant only those varieties which are seldom or never affected by this scourge, if there are any

such favored kinds. I have been told that even the Houghton mildews in some localities in some seasons. Still in most instances our hardy, native varieties are free from rust, if grown on moist, rich, well cultivated land and well pruned. Sometimes a great many young suckers will start in spring which should be cut out. The regular pruning can be done any time after the leaves fall and before the buds start in spring. Except for an amateur's experiments, the large foreign varieties are too uncertain for our climate.

Varieties.

Houghton's Seedling—Has been the principal variety grown of late years both for garden and field culture, and many barrels are sent annually to New York market. The fruit is small, almost round, pale red when ripe, sweet, tender and of good flavor. It is readily propagated by cuttings, like the currant. The plants are very hardy and vigorous, and as they grow large, have a spreading, drooping tendency. It is exceedingly productive, and rarely mildews.

This variety is rapidly being superceded by the—

Downing.—A larger and better berry, oval, greenish-white and of excellent flavor. The plant is a strong upright grower, and very productive. It is no doubt the best gooseberry thus far introduced. This variety is said not to grow as readily from cuttings as is the case with most kinds. For home planting it can be increased by layering, or bending branches down in spring and covering part of them with earth. By fall these branches will be well-rooted and can be set out elsewhere.

Mountain Seedling.—Larger than either of the two first named but not equal in quality.

Smith's Improved.—A strong grower. Berry large, light green, oval, but not equal to the Downing.

Roe's Seedling.

(Named for T. Hazard Roe, upon whose place it originated.)

This is by far the largest and finest gooseberry that I have ever seen, and if it continues free from mildew and flourishes elsewhere as in its original home, it cannot fail to supercede all others.

Last year, on account of the severe and early drouth, they were not up to their usual size, but during their fruiting season I cut a number of branches laden with berries and took them to New York. Prominent commission men to whom I showed them said that they would bring almost double the price of any in market. I next took them to Prof. Thurber, editor of the American Agriculturist.

I saw at once that he was impressed. After examining them he remarked with some emphasis:

"That's considerable of a gooseberry, young man."

He at once sent for his engraver and directed that the drawing should be made which appeared in November number of the *American Agriculturist* and is reproduced on the cover of this manual. He also requested me to furnish a history of the variety as far as I could learn it. As a result the following statement, prepared by Dr. Thurber, accompanied the engraving in the Agriculturist:

"Sometime last summer the Rev. E. P. Roe, of Cornwall-on-the-Hudson, brought us a specimen of a gooseberry, in which bush and fruit appeared to be perfectly healthy, and the fruit was much larger than any of our native sorts, abundant, and of a fine green color. Upon learning it was a new seedling, we had an engraving made of it, and requested Mr. Roe to give us its history, which he has done substantially as follows: 'In 1826 Mr. William Roe purchased quite a large plot of ground in what was then the outskirts of the village of Newburgh, and stocked his place with the best fruits that he could then procure. That which was then a home in the country, is now a country-like home in the centre of a large city. Mr. T. Hazard Roe is the

present proprietor, and inheriting the taste of his father, has given his place a local reputation for its fine fruit for many years. Among the known varieties many seedlings were permitted to grow, and there are now natural pears, peaches, and apples on the place, that are very valuable, as well as a seedling raspberry that promises better than anything I have yet seen.

"But the seedling gooseberry which I brought to your office is perhaps the fruit of the greatest promise. For many years I had been struck by the remarkable size and fairness of these gooseberries, and supposed that they were some very fine English variety that by some good fortune had not mildewed. Sometime ago I expressed my surprise to Mr. Roe that his gooseberries were so free from rust and then learned for the first time that they were a seedling variety, which originated on his place more than fifteen years ago, and that they never had mildewed. I at once concluded that if it could be made to do as well elsewhere, it would be a great advance upon any variety of this berry I had yet seen. The bush is a very strong grower, and perfectly hardy. The variety will be thoroughly tested in various soils and localities, and the best judges satisfied as to its character, before it is sent out. Thus far I have never seen a more abundant bearer, the fruit being large, green, and fine flavored when ripe."

It is a chance seedling, and nothing is known concerning its parentage.

I have found by experience that the plant is readily propagated by cuttings, and I have now quite a large number of young bushes raised in this way without extra care—no more than I have given to currant slips. Some young bushes have borne fruit on my Cornwall place, with no trace of mildew. I shall be able to test the variety very fully the coming season, and will accurately report the results whether favorable or the reverse. The plants will not be for sale before next fall, and perhaps not until the following year.

THE BLACKBERRY.

THERE is scarcely a more wholesome fruit than this, and yet the majority are depending upon a precarious supply from the woods, extemporized into a jam by the grimy hands of unknown pickers, when for six weeks together they might have abundance of large, luscious berries near their own doors. There is no fruit more easily raised. A Kittatinny blackberry bush will grow where a burdock would languish, and yet there are thousands of burdocks to one blackberry bush.

Its culture is very simple. Select land that is not very moist or rich. I have succeeded well with it on high, gravelly knolls, but unless well mulched it is apt to suffer from drouth. Light, warm land, however, is preferable to that which is heavy and damp, for upon the latter-named soils there is too much growth of wood which does not ripen fully, and therefore is killed by the winter's cold. But deep plowing in preparation is always of advantage, as it gives the roots a wide range, and prevents the plants from suffering from drouth.

Fall is the best time for planting, but it does very well when set in spring. I succeeded satisfactorily with Kittatinny plants put out late last spring, in spite of the severe drouth that followed. Indeed, only utter neglect can prevent success with blackberries where they are not winter-killed.

For field culture let the rows be eight feet apart, and the plants three feet distant in the rows. If the soil is poor and light, scatter a liberal dressing of muck compost, or any fertilizer that is not heating, down the furrow in which they are to be

planted, and the roots will follow this and throw up suckers along the rows where they are wanted, instead of in the middle spaces.

In garden culture six feet by four is a good distance at which to set the plants. There the soil is sufficiently rich, and only clean cultivation and rigorous pruning will be necessary.

The only difficulties in the way of blackberry culture, are the savage thorns, rampant growth, and liability to be killed by severe winters. The first two obstacles can be overcome by the frequent use of pruning-knife and hook. A little work at the right time saves a great deal of trouble. When a blackberry sucker first appears it is a very innocent and little affair, and a child can pull it up, but, like a bad habit, if left till fully developed, is most formidable, and its removal requires heroic effort. One might almost as well attack a wild-cat as to cope with it bare-handed. When the shoots are young and tender, the hoe, knife, or sickle can easily keep them within bounds. Keep the rows down as far as possible to a single line of plants standing one foot or eighteen inches from each other. As fast as the suckers, which are to be left for fruiting in the rows, attain the height of four feet, clip off their tops. This causes them to throw out side shoots, and upon these the best fruit is borne. They also intertwine together, forming a sort of hedge, and thus are able to stand without stakes. If well-pruned and headed back, all the varieties, except the Early Wilson, can stand without support. This variety has much of the slender trailing habit of the running blackberry, and needs staking. But cutting it back will greatly increase its stockiness. It may be well perhaps to stake all varieties the second year, for until the plants become established, the young canes are weak and slender. The regular pruning and cutting out of the old wood can be left till after the buds swell in spring, making one labor of it. At this time it can be seen which parts are alive, and which have been killed by the frost; shorten in the side shoots one-half or two-thirds, and more and better fruit will be obtained. When the bushes are left to grow very large and bear all the fruit that

forms upon them, the berries do not mature, especially if it is dry, but grow hard and seedy. The pruning in spring can best be performed by a strong pair of shears upon two long rods which enables one to work at a respectful distance.

The liability to be winter killed is more difficult to contend with, and in our latitude the Early Wilson is almost always destroyed, if not protected. It can generally be preserved by pinning it close to the ground by a shovel or two of earth, or by keeping it down by laying bean poles upon them, and covering with tomato vines or any coarse litter. I find that protecting with earth is the simplest and surest way, and at the north I should think it would pay well, for if this variety survives, it yields an early and enormous crop.

The other kinds are such stiff stocky growers that they cannot be bent over and covered, and some winters seriously injure those that are called hardy. Moreover varieties that are hardy upon New Jersey sand will not endure winters farther north. If we can get a blackberry that is as good as the Early Wilson or Kittatinny and perfectly hardy in the high latitudes, it will be a great acquisition. There are several new varieties which are claimed to endure all temperatures, but the same was asserted once of the kinds which we sometimes find shriveled and dead in spring. No degree of frost ever affects the roots, but only the bearing canes. The best precaution in the case of the stocky growing kinds is to head back the bushes in summer to the height of three or four feet, thus causing them to throw out side-shoots low down near the ground so that the snow protects them. When we are favored with mild winters there is seldom any loss. Only rarely do my vines suffer severe injury. Even to the far north a few Kittatinny bushes can be protected by leaning evergreen branches upon them or covering with leaves or any coarse material. They are so nearly hardy that very little protection answers. But the canes of every variety that I have seen, if allowed to grow thick and high upon rank moist soil will almost invariably suffer so much with the frost as to be unprofitable.

Varieties.

For home use I would recommend as first in value the

Kittatinny—A very large and delicious kind that continues long in bearing. It is a tremendously strong grower, and should be kept well in check by destroying the suckers and heading back in summer. It is also first class for market where late blackberries bring good prices. Its flavor when fully ripe is most excellent.

Wilson's Early.—Quite distinct in its growth and character from the above, for it has, especially when young, something of the trailing habit of the running blackberry. For this reason we think it can be grown quite far to the north, for although it is very tender, and generally killed by frost in this latitude, it can, from its slender and willowy nature, be bent down in fall and covered with earth. In any region where very large and early blackberries bring good prices it will pay to do this. I cover mine completely in November either with earth or anything that will keep the canes down close to the ground. It is the best market berry, but unless one is willing to give it winter protection it will not pay to raise it in this latitude. The fruit is very large, black, oblong, quite firm but not of so rich and good a flavor as the Kittatinny.

Dorchester.—A very good variety, but not quite so productive as either of the above. The canes are vigorous and quite hardy. The fruit ripens early and is large, sweet and very good. It is regarded as an excellent market variety.

Snyder.—Said to be perfectly hardy and very productive. Fruit medium in size and of good flavor.

Lawton, or New Rochelle.—This old and well-known variety is now quite superceded by better kinds. The canes are very

tender and are so strong and stocky that they cannot be laid down and covered. The fruit is not ripe when it is black, and when fully ripe is very soft. But it is large and of very good flavor, and the bushes continue long in bearing.

There are other new varieties concerning which great things are asserted. I *hope* fuller experience will enable me to report favorably upon them.

PICKING AND MARKETING FRUITS.

Packing Plants, Profits of Small Fruit Culture.

THE question often arises, after all, do small fruits pay? They pay some people well, and unless location, soil, or climate are hopelessly against you, the degree of profit will depend upon your skill, judgment and industry. The raising of small fruits is like other callings in which some are getting rich, more earning a fair livelihood, and not a few failing. I do not seek to mislead any one by rose-colored pictures. It is a business in which there is an abundance of sharp, keen competition, and ignorance, poor judgment, and shiftless, idle ways will be as fatal as in the work-shop, store, or office.

Innumerable failures result from inexperience. I will give one extreme example which may serve to illustrate the sanguine mental condition of many who read of large returns in fruit culture. A young man, who had inherited a few hundred dollars, wrote me that he could hire a piece of land for a certain amount, and wished to invest the balance—every cent—with me, for plants, thus leaving himself no capital to continue operations, but expecting that a speedy crop would lift him at once into a prosperous career. I wrote that under the circumstances I could not supply him—that it would be about the same as robbery to do so, and advised him to spend several years with a practical and successful fruit-grower and learn the business.

Most people enter upon this calling in the form of a wedge, but only too many commence at the blunt end, investing largely at once in everything, and therefore soon taper down to nothing.

The wise begin at the point of the wedge and develop their business naturally, healthfully, learning by experience and careful observation, how to grow fruits profitably and which kinds pay them best. There ought also to be considerable capital to start with, and an absence of the crushing burden of interest money. No fruits yield any returns before the second or third years; and there are often unfavorable seasons and glutted markets. Nature's prizes are won by patient, persistent industry and not by Wall street sleight of hand.

Location is very important. A fancy store, however well-furnished, would be a ruinous investment at a country cross-road. The fruit farm must be situated where there is quick and cheap access to good markets.

And such markets may be near, and good cultivation produce an abundance of fruit, and still much loss arise from not properly placing the fruit before purchasers and consumers. This leads to the questions, which are the best baskets, packages and methods of shipping. We will commence first with:

Strawberries.—After spending considerable time in the New York markets, I found far more difference of opinion concerning packages than I expected. The verdict of the Broadway fancy trade is in favor of the Beecher baskets, quarts and pints, and for choice raspberries, half pints. W. and C. Smith, the well-known dealers at 189 Broadway, prefer crates containing 32 Beecher quarts or 45 pints. Wm. N. Ward, 13 Broad st., finds that Beecher quarts filled with large showy fruit, take the best. J. W. Salter, proprietor of the Central market, cor. 19th st. and Broadway, prefers the Beecher baskets, but says that quality and price of the fruit make far more difference with the purchaser than the package. Olmstead and Sheffield, 1266 Broadway, give their verdict in favor of Beecher pints, well filled, as they admit of such good ventilation, and there is not enough fruit together to be crushed by its own weight. They also prefer the Beecher quarts to the square baskets, and the Beecher half-pints for raspberries. At the same time they would much rather have

handsome fruit in the square, than ordinary berries in the round baskets. As fancy kinds, the Jucunda, Triomphe, Pres't. Wilder and Monarch, are most in favor with the above named parties.

The following cuts represent them to the eye:

VENEER BASKETS.

QUART. PINT. ½ PINT.

STAR BASKETS.

QUART. PINT

The points in favor of the Beecher basket, are that they hold a full quart, that their construction gives the fruit plenty of ventilation, and that large, handsome fruit shows better in a round basket. The adverse points are that their shape causes them to take up more room in the crate than square baskets, and therefore to require larger packages for the same quantity, and that they do not fit in the crates tightly, the rough handling they often receive jarring the fruit out of the baskets and causing them to appear partially filled and unattractive.

The veneer quarts of the above style are quoted at $35; pints at $30; and half-pints at $26 per 1000. Star quarts at $28; and pints at $25 per 1000. Thirty-two quart crates of each kind at $1.55; forty-five pint crates at $1.40. The above gives an idea of the prices, and for further information the reader can address the Beecher Basket Co., Westville, Conn.

But when we come to the large, open market and among the commission houses where after all our fruit must be sold, we find opinion almost equally divided between the round, or Beecher baskets, and the square American, or Delaware quarts. It is said in behalf of the square quarts that they can be bought at about half the price of the Beecher baskets, that they fit so snugly and tightly in the crates that it is almost impossible for rough handling to spill the berries, and spoil the looks of the baskets when the crates are opened, and that packages containing the same amount are smaller and more easily handled. For shipping long distances, the square, closely-fitting baskets seemed quite

decidedly preferred to any other, although it was admitted that the round baskets would carry the fruit better on account of superior ventilation if the crates were only handled properly; which, unfortunately, is seldom the case for carmen, freight-hands and boatmen belong to the same genus as "baggage smashers." Moreover it is said that the square or American baskets are more profitable to the grower than the Beecher quarts because they do not hold quite so much, while the round hold a full quart, and if heaped, a little more, but, it is complained, will bring no better prices than the square quarts. It is said that, in many instances, those who buy Beecher baskets empty them into American quarts, thus making the same quantity of fruit bring more money. This feature should be changed, and a quart basket should hold a quart. But those who complain of scant measure should be willing to pay more for the Beecher baskets. The only advantage however, that I could learn they had, was that, in a "glut," the Beecher quarts would sell first, the fruit in each case being equally good. There is no deception as the capacity of each basket is well understood. Still it would be far better to have each package just what it purports to be. It is said that the square Delaware quarts, if well filled and rounded up, as all baskets should be to sell well, hold a full quart. But the compact, snug fitting, and good carrying qualities of the square baskets, together with their cheapness, will always make them favorites with very many. I find that the large growers in New Jersey and to the southward use them very generally, and that the retail dealers on Sixth Avenue like them as well, if not better, than any other. Delaware baskets, both pints and quarts, can be bought at prices varying from $15 to $20 per 1000 with a discount upon large orders.

It should be said, however, that *square pints* and *thirds* are not regarded with much favor in market. The round Whitney veneer cup, holding a third of a quart, is very largely used both for strawberries and raspberries. The package has the advantage of cheapness, simplicity and strength, but the lack of ventilation will prevent it from coming into general use. Willits &

Co, 103 Murray st., New York, who have had much experience, recommend Delaware quarts and Beecher pints for strawberries and Beecher half pints for raspberries. I am so well satisfied that their views are correct that I shall in the main follow their advice. The advertisements of many trustworthy manufacturers of baskets and crates can be found in the agricultural papers. I have tried to give the reader the pros and cons concerning the two styles most in favor, leaving to him the choice. In view of my nearness to market, and the fact that I shall chiefly grow the fancy varieties, I shall invest largely in Beecher pints. For Wilson strawberries I would recommend as a good package, the Delaware 32 quart crate, and for large berries, the 24 quart crate.

Picking.—Having procured the baskets which suit us best, the next thing is to fill them properly, and get them into market looking fresh and attractive. It is just at this point that very many wrong themselves or permit themselves to be wronged. The time is past when all strawberries will sell as such at so much per quart. Appearance often doubles the price, or makes it difficult to sell the fruit at all. Soiled, muddy berries, even though large, will bring but wretched prices, therefore the importance of mulching. The fruit may be in beautiful condition upon the vines and yet careless picking spoil it. The work is often performed by children, or by those who have had no experience, or from inherent shiftlessness, do everything in the worst possible way. I have seen beautiful berries that in their brief transit through grimy hands into the baskets, lost half their value. Many pickers will lay hold of the soft berry itself and pinch it as they pull it off. Then instead of dropping it into the basket, will hold it in their hand as they pick others, and as their hand grows fuller they will squeeze them tighter, and when at last the half-crushed handful is dropped into the basket the berries are almost ruined for market purposes. Not for $10 per day would I permit such a person to pick for me, for he not only takes fifty per cent from the price of the fruit, but gives my brand a bad reputation. If possible the grower should carefully

select his pickers and have them subscribe to a few plain rules like the following.

1. The berries must be picked with the thumb and fore finger nails and not held in the hand but dropped into the baskets at once.

2. No green, decayed or muddy berries will be received.

3. There must be no getting down upon all fours in the beds, thus crushing both green and ripe fruit.

4. There must be no "topping off" with large berries, and the fruit must be equally good all through the basket.

In the early pickings of Wilsons when many of the berries are of good size, and of all the large, choice kinds, it is best to make two grades, putting the large and small by themselves, and keeping varieties separate. A small frame with short legs at each corner and a handle is a convenient appliance to hold six or more baskets while picking. Give to each picker two sets of baskets, one for the small, and one for the large berries, and pay equally for both so that there may be no motive to thwart your purpose; two cents per quart is the usual price. Have two styles of tickets, red and blue, for instance, the red having a higher value and given to those who bring the berries to the place of packing in good order, according to rule; let the baskets not picked in conformity to the rules be receipted for with the blue tickets. Receiving many of the latter soon becomes a kind of disgrace, and thus you appeal to the principle of self-respect as well as self-interest. Get rid of those who persist in careless picking as soon as possible. Insist that the baskets be full and rounded up, and the fruit equal in quality down to the bottom. As far as possible let the hulls be down, out of sight, and only the fruit showing. If you have berries that are extra fine it will pay you to pick and pack them yourself, or have some one do it that can be depended upon. Do not pick the fruit, if you can help it, when it is wet with dew or rain; still there are times when this must be done to save it. Never let the baskets or crates stand long in the sun and wind, as the berries so treated soon become dull

and faded. As soon as a crate is filled put it under cover in a cool place till shipped to market. Insist upon careful, gentle handling as far as possible. I wish we could unite in prosecuting parties who spoil our fruit by tossing the crates about. That commission men are but human is a fact that will scarcely be disputed, and it will, perhaps, be best to try several and deal with those who do the best for you.

Profits.—No certain information can be given upon this subject. They will depend upon the cost of land, manure, labor, the number of bushels raised per acre, prices, etc. Wm. Parry says that strawberries will pay him at six cents per quart, but I do not think they would pay me at that price. I should think that a *large* crop at ten cents would always be remunerative. A moderate crop of fine berries will often pay better than a large crop of small soft fruit. The number of berries that *can* be raised upon an acre no one can state. The amounts of fruit that are produced, differ greatly with location, soil, culture and variety. Mr. Fuller speaks of 300 bushels per acre. Mr. Parry says that he has raised 240 bushels, but considers one-third of that number a fair crop; while in the light sandy soil of Delaware 47 bushels are regarded as the average. In the fruit-growing region of Ulster Co. 140 bushels are considered a good crop, and 180 bushels a large yield. I have raised 95 bushels on two-thirds of an acre. As we have intimated before, the quantity raised does not depend so much upon the number of square feet as upon the variety, soil, and cultivation. There have been instances where an acre of strawberries has yielded a clear profit of $1,000, but one third that amount would be nearer the general average. I kept an account with an acre one favorable season, and my gross sales in fruit and plants was $1,400, about $800 of which was profit. Wm. Parry, of Cinnaminson, N. J., thus records his experience. "For ten years past our whole crops have averaged about 2,500 quarts per acre, and averaged 12 cents per quart in market, giving the following results :

Commission, 10 per cent	$30.00
Picking, at 2 cents	50.00
Interest on land	10.00
Manure	25.00
Use of baskets	10.00
Cultivation, &c.	30.00
Net profits	145.00
Gross proceeds, 2,500 quarts, at 12 cents	$300.00

Shipping Plants.—If they are expressed, pack them in strong shallow boxes, tied loosely in bundles of fifty, with the roots down and the tops up and exposed to the air. In cool weather, a layer of damp moss over the bottom of the box, and between each row of bundles, will preserve them. Then slats are nailed closely across the top of the box. If the plants are sent in hot, dry weather, it is best to dip each one in a mud paste, that will coat the roots, and place them very loosely in the box to prevent heating; and then use moss, chaff, or the fine rakings of the lawn, as before. Or in cool weather they may be packed in barrels, first boring or cutting many holes in the sides for air. Place a layer of moss, then a layer of plants in a circle, with the tops out toward the sides, continue these layers till the barrel is full. Thus a round hole down through the centre to the bottom of the barrel is left for circulation with an opening in the cover or head over this breathing place. When the plants are sent by mail, wrap the roots in damp, (not wet, dripping) moss, then encase them in oiled paper, with a neat wrapper of brown paper over this. Leave a little of the top exposed for air, and to show what the package contains, and tie on a card of direction. If the government exists for the benefit of the people and not the people for the sake of the government, then Congress did the country a great injury in doubling the postage on plants, seeds, etc. In our wide and sparsely settled land, multitudes are too distant from express offices to find them of any service.

The same general principles that have been stated above apply to all the other small fruits.

Raspberries—should be handled with even greater care than

strawberries, as they are softer and more perishable. They should never be put into anything larger than a pint basket, while thirds of a quart and half-pints are much better. The Beecher half-pint seems to be coming into favor, while the Whitney thirds are chiefly used upon the Hudson river. There is a wide shallow basket made in Rochester, that some growers think highly of. With most varieties of raspberries, if any considerable number are placed together they soon become a soft, mouldy mass. The ideal raspberry basket, therefore, is small, open, and shallow; and the crates should permit free circulation. Pick the fruit when dry, and as soon as it is ripe, as over-ripe berries decay quickly. Keep varieties by themselves. Mr. Parry says that raspberries will pay at ten cents per quart, but I do not think that any money can be made from them at less than twelve. They usually sell at much higher figures. Blackcaps, of late years, have scarcely brought paying prices in New York market. The following statement shows what a difference variety and therefore quality makes in the same market. "On the 7th day of July, 1871, raspberries were sold at wholesale, in Philadelphia, as follows, viz.:

Black Cap	5	cents per quart.
Philadelphia	8	do.
Pearl	16	do.
Susqueco, or Brandywine	30	do.
Hornet	60	do.

Blackberries sell well in both quart and pint baskets, but if one is sending a long distance, pints will carry the fruit in better condition.

The best method of shipping currants is to have tills, or shallow boxes, two or four in number, fitting in one's berry crates, which can thus be made to serve a double purpose. Mark on these tills the net weight of the fruit. For large, cherry currants, quart and verbena baskets are often used. Many like a long market basket holding about 25 pounds, while those who raise grapes often make the same shallow boxes answer for both.

Gooseberries are shipped in all kinds of packages, from bar-

rels to quart boxes. I prefer a crate with tills for both gooseberries and currants. These two fruits, especially the latter, are becoming increasingly profitable every year.

In summing up it may be briefly stated that with all fruits, and in all the large markets, beauty, size, and good keeping qualities are the points which are chiefly considered. Very few know much about the names of varieties, but eagerly purchase that which appears the most attractive. The grower who can make his crates of berries when opened look better than any others near, will always receive good prices. If he tops off poor fruit with large berries, he will soon scarcely find a market at all. If he always fills his baskets *well* and *honestly*, and gives good weight, taking pains to make his packages appear attractive, his fruit will soon be in much demand and spoken for in advance.

LAST WORDS.

In bowing myself out from this brief interview with the reader, I will merely add that I have tried to make my preceding words simple and to the point—helpful. I lay no claim whatever to scientific and exhaustive thoroughness. It is rather as if I had sat down and chatted with the reader for an hour, telling him what little I knew, and answering his supposed questions. If he had been actually present he would have asked scores that I could not have answered. But for practical purposes I have honestly tried to be plain, accurate, and suggestive, so that even the novice could understand what he must do to succeed with the most delicious and wholesome fruits of the year. In just distrust of my own judgment and knowledge, I have read all the preceding pages, except those treating of markets, etc., to Charles Downing, who is rightfully considered one of the very chief authorities upon these subjects. But where I am in fault the errors are my own.

It is one of the hopes of the future that I may be able to observe carefully the many new varieties of fruit that are claiming attention, and by reporting as accurately as possible upon them annually, enable others to judge of their value. I also hope to give from time to time the results of experiments, and my own, and the experience of others in the various methods of culture. But whether such expectations will ever be fulfilled is a question that time only can answer.

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